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ORIGINAL ARTICLE

The sustainability performance of agricultural cooperatives: A systematic literature review

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Abstract

This study examines how the literature addresses the sustainability performance of agricultural cooperatives through four key dimensions: economic and financial, environmental, social and governance. As key entities within the social economy, agricultural cooperatives play a crucial role in advancing sustainable development goals due to their community-oriented structure, democratic governance based on the user–owner principle and strong territorial ties. We systematically review 274 articles published between 1991 and 2024 that address at least one dimension of the sustainability performance of agricultural cooperatives. Our thematic analysis reveals a significant increase in published studies since 2018, covering a wide range of countries and agricultural products. While the literature predominantly focuses on the economic and financial dimension—either alone or in combination with other dimensions—the environmental, governance and social dimensions are significantly underrepresented, especially in Europe and North America, and in specific sectors such as wine production. In addition, many studies lack a solid theoretical foundation. Overall, the sustainability performance

of agricultural cooperatives remains a complex and evolving issue, and this study highlights avenues for future research to improve knowledge and practice.

KEYWORDS
Agricultural cooperatives, Literature review, Performance, Sustainability

JEL CLASSIFICATION
M14, O13, Q13

1 | INTRODUCTION

In recent decades, the concepts, theories and institutional contexts of sustainability have evolved significantly. Since the publication of the Brundtland Report in 1987, sustainability has been defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. With the increased emphasis on sustainable development, the focus has gradually shifted from corporate social performance, which is closely related to corporate social responsibility (CSR), to corporate sustainability performance. CSR itself has expanded beyond social and ethical issues to include environmental responsibility (Carroll, 1999; Lee, 2008; Wood, 1991). Interest in corporate sustainability performance has consequently increased in recent years, especially since the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, which is expected to further increase this focus. However, while some studies have begun to explore the links between the SDGs and the business sector, they often reveal significant limitations in both the theoretical framework and empirical implementation (Pizzi et al., 2020).

A company's sustainability performance encompasses its performance across all dimensions of corporate sustainability (Schaltegger & Wagner, 2006). According to the standard distinction, companies strive to achieve economic viability, environmental sustainability and social responsibility (Elkington, 1999; Van Marrewijk, 2003). To improve their sustainability performance, companies must adopt a comprehensive management approach that includes governance changes at the internal and external levels. Internally, this requires changes in leadership, commitment and management attitudes, where strategic decisions about investments and practices drive organizational change (Elkington, 1999). Externally, this involves improving the company's relationships with stakeholders and society at large, including people and the environment (Hörisch et al., 2014). Therefore, we retain a broad definition of sustainable performance that encompasses economic and financial, environmental, social and governance (ESG) dimensions, as well as their interactions.

Agricultural cooperatives are social economy organizations that bring together small- and medium-sized farmers (Mertens & Marée, 2015). Their social structure and democratic governance, rooted in the user–owner principle, inherently align them with sustainability objectives[1] (Candemir et al., 2021; Dale et al., 2013). The concept of cooperative sustainability provides

[1] Three of the seven cooperative principles of the International Cooperative Alliance demonstrate this proximity: the fifth principle 'education, training and information', which focuses on internal stakeholders (members and employees); the sixth principle, 'cooperation between cooperatives', which focuses on cooperative stakeholders; and the seventh principle, which deals with 'concern for the community'.

an opportunity for renewal, particularly by integrating environmental, social and economic goals into their governance frameworks (Filippi, 2020, p. 502), thus actively pursuing the SDGs (Filippi et al., 2023). Through the collective decision-making of their members, cooperatives can enhance the sustainability of both internal and external stakeholders, allowing them to act in favour of sustainable development and to respond to the significant challenges related to the environmental and food transitions (Gega et al., 2024; Meyer et al., 2017). For example, farmers' engagement with environmental and food transitions is crucial for addressing urgent issues such as reducing pollution and chemical use, safeguarding biodiversity and promoting healthier, more balanced diets (Ajates, 2018; Kalogiannidis et al., 2024).

Nevertheless, agricultural cooperatives encompass a variety range of organizational structures, ranging from traditional farmer-centred cooperatives to new-generation cooperatives and cooperative groups (Cook & Chaddad, 2004). This diversity can lead to deviations from the cooperative ideal, resulting in property rights and agency cost issues, including horizon, free-rider and control problems, especially due to the heterogeneity of their members (Cook, 1995). Moreover, agricultural cooperatives face significant challenges in implementing sustainability practices. For example, Bijman and Wijers (2019) discuss the challenges of including and excluding certain groups, such as small farms or young farmers, in terms of strategy, membership and governance in producer cooperatives in developed countries. They demonstrate that shifting from a community-oriented cooperative to a market-oriented cooperative often results in decreased inclusiveness. In developing countries, state-controlled 'pseudo-cooperatives' tend to be unstable and inefficient (Wadesango & Mabunga, 2017), which complicates the development of sustainable cooperatives. Furthermore, while some cooperatives may respond to sustainability-oriented regulatory frameworks, this motivation may not align with their fundamental nature and values (Eguren & Alias, 2024). Ultimately, cooperatives must navigate dilemmas that challenge their viability and sustainability. These dilemmas include tensions between the interests of upstream farmer-members and downstream processors and retailers, as illustrated by the 'double hourglass' concept (Ajates, 2018, p. 209). Cooperatives must also balance social and business functions, as well as meeting standards and satisfying members' needs (Bijman et al., 2016).

In recent decades, the economic and financial dimensions have dominated the literature on sustainable performance in agricultural cooperatives, especially in countries such as the United States. In the agrifood sector, it is difficult to separate the economic dimension from others, especially the social dimension, because farmers' income and well-being are closely linked to the economic performance of cooperatives (Saz-Gil et al., 2021). The most studied dimensions of sustainable agricultural development include environmental, economic and social aspects (Candemir et al., 2021; Liang et al., 2023; Xu et al., 2018). However, governance is also crucial due to its importance in relation to the specificities of cooperatives and its impact on performance (Bijman et al., 2014; Franken & Cook, 2019; Grashuis, 2018c; Lucas-Martinez et al., 2020; Mertens & Marée, 2015; Saïsset & Codron, 2019; Saïsset, 2020).

Despite their significant role in the agrifood sector, research focusing specifically on the sustainability performance of agricultural cooperatives is limited, particularly with regard to the concepts, theories, methods and assessment indicators (Liang et al., 2023; Piñeiro et al., 2020). Existing literature reviews on this topic primarily focus on agricultural cooperatives and farms. Gega et al. (2024) are a notable exception, examining the agrifood supply chain. These reviews cover various topics, including the relationship between sustainability and ownership structure (Gega et al., 2024; Grashuis & Su, 2019), the role of agricultural cooperatives in achieving sustainability (Candemir et al., 2021), sustainability performance assessment (Marcis et al., 2018) and sustainable practices implementation (Aboah et al., 2024). However, most reviews only address

a subset of the four dimensions of sustainability performance. For example, Grashuis and Su (2019) focus on economic, financial and governance aspects, while others consider the economic, financial, environmental and social dimensions (Aboah et al., 2024) or only the economic, environmental and social aspects (Candemir et al., 2021; Gega et al., 2024; Marcis et al., 2018). Earlier articles used traditional literature review methods, whereas more recent research has adopted systematic approaches, occasionally including book chapters and theoretical articles.

Our review includes a comprehensive collection of articles published through the end of 2024. We analyse a wide range of studies on agricultural cooperatives from all countries, using both quantitative and qualitative methods. We employ a systematic approach combined with thematic analysis. We conduct a content analysis based on key criteria, including location, products, explanatory factors of sustainability performance, theoretical frameworks (if applicable), data types and methodologies. The goal of this review is to provide valuable insights for researchers and practitioners by summarizing the current state of knowledge, identifying key findings and highlighting gaps in the literature.

This analysis is based on a review of existing academic articles assessing the sustainability performance of agricultural cooperatives. These articles examine one or more dimensions of sustainability performance, including economic, financial, and ESG aspects. This literature review has three primary objectives. First, it aims to provide a clear definition of sustainability performance as it relates to agricultural cooperatives, outlining its scope and identifying relevant performance measures. Second, the review examines major theories, methodologies and findings related to the topic in order to propose a comprehensive model of cooperative sustainability performance. Third, it identifies gaps in the literature and suggests future research directions to address them.

The findings of this article complement previous literature reviews by addressing the challenges of sustainability performance for agricultural cooperatives in several key ways and highlighting recent developments in the literature. First, the findings clarify the concept of sustainability performance and its different dimensions across studies. Indeed, the economic and financial dimension is pivotal to the sustainability of agricultural cooperatives and their relationships with their members. In contrast, the ESG dimensions have received less attention. Second, the findings identify and document interactions, particularly at two levels: between agricultural cooperatives and their members, and between economic performance and ESG performance, while the two are often at odds. Third, they document the gaps in the consideration of SDGs and ESG factors. In particular, they highlight the importance for agricultural cooperatives to consider and communicate ESG factors in the future, an area in which they currently lag behind. Fourth, they suggest key research perspectives to improve the sustainability performance of agricultural cooperatives, both internally and in their relationships with members.

The remainder of this article is organized as follows. Section 2 describes the methodology used for the literature review. Section 3 presents a descriptive analysis of the sample. Section 4 characterizes the sustainability performance of agricultural cooperatives across its four dimensions. Section 5 presents the research gaps identified in this study. Section 6 concludes the article and offers research perspectives.

2 | METHODOLOGY

In order to assess the sustainability performance of agricultural cooperatives, our methodology is based on a systematic review of the relevant literature. The methodology follows the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) review guidelines, originally

BOX 1 Keywords and Boolean operators.

(TS = ((‘agricultural cooperative*’ OR ‘cooperative entrepreneurship’ OR ‘co-operative entrepreneurship’ OR ‘Co-ops’ OR ‘farmer cooperative*’ OR ‘Social and Solidarity Economy’ OR ‘social and solidarity enterprise’ OR ‘wine-growing cooperative*’ OR ‘wine* coop*’ OR ‘dairy cooperative*’ OR ‘producer cooperative*’ OR ‘producer organ*’))
AND
TS = ((‘performance*’ OR ‘competitive’ OR ‘*efficienc*’ OR ‘*financial information’ OR ‘*financial report*’ OR ‘impact assessment’ OR ‘integrated report’ OR ‘value creation*’ OR ‘member* payment*’OR ‘Life Cycle Assessment’ OR LCA* OR ‘L-CA’ OR ‘Environmental, Social and Governance’ OR ESG* OR SDG* OR sustainab* OR ‘Triple bottom line’)))
AND (EDN = = (‘WOS.SSCI’ OR ‘WOS.SCI’ OR ‘WOS.ESCI’ OR ‘WOS.ISTP’ OR ‘WOS.ISSHP’)
AND DT = = (‘ARTICLE’ OR ‘EARLY ACCESS’) AND LA = = (‘ENGLISH’))
AND Publication Date: 1987-01-01 to 2024-12-31

developed for the medical sciences (Liberati et al., 2009) and subsequently applied to business, management and organizational studies (Denyer & Tranfield, 2006; Linnenluecke et al., 2020; Sauer & Seuring, 2023; Schaub et al., 2023). The systematic method uses a replicable, scientific and transparent process (Tranfield et al., 2003) to produce consistent and unbiased results for both scientific purposes and for practitioners and managers (Tranfield et al., 2003).

A systematic literature review methodology has been designed to identify, select, evaluate, appraise and synthesize the contributions of existing studies in a way that allows the formulation of ‘reasonably clear conclusions about what is known and what is not known’ (Denyer & Tranfield, 2009). Building upon the work of Snyder (2019) and Tranfield et al. (2003), our review is organized into four sequential phases: (1) design, (2) implementation, (3) analysis and (4) writing.

2.1 | Design of the review

The purpose of this study is to provide a comprehensive review of the existing literature on the sustainability performance of agricultural cooperatives across all geographic regions and production sectors. Consequently, this research is topic-centred (Linnenluecke et al., 2020). The research team (authors of this article) developed a plan for the literature review that included criteria for the inclusion and exclusion of studies. This process reduced the risk of bias and ensured an adequate sample size (Linnenluecke et al., 2020). Our search strategy consisted of several steps. First, we defined the search terms and conducted three tests to verify these terms and the inclusion criteria. The first test was conducted with a smaller sample size, following the recommendations outlined in literature review standards and guidelines (Snyder, 2019). In the second test, we adjusted the search terms, specified the databases to be searched (Web of Science [WoS] and Science Direct-Scopus) and defined the inclusion criteria. We set the publication period from 1987 (the year of the Brundtland Commission report) to the end of 2024. Keywords included various formulations of cooperative names, performance and sustainability (see Box 1).

2.2 | Implementation of the review

To ensure the reliability of the review process and to limit the subjectivity of the selection, two reviewers were randomly assigned to select each article. The review, revision and documentation

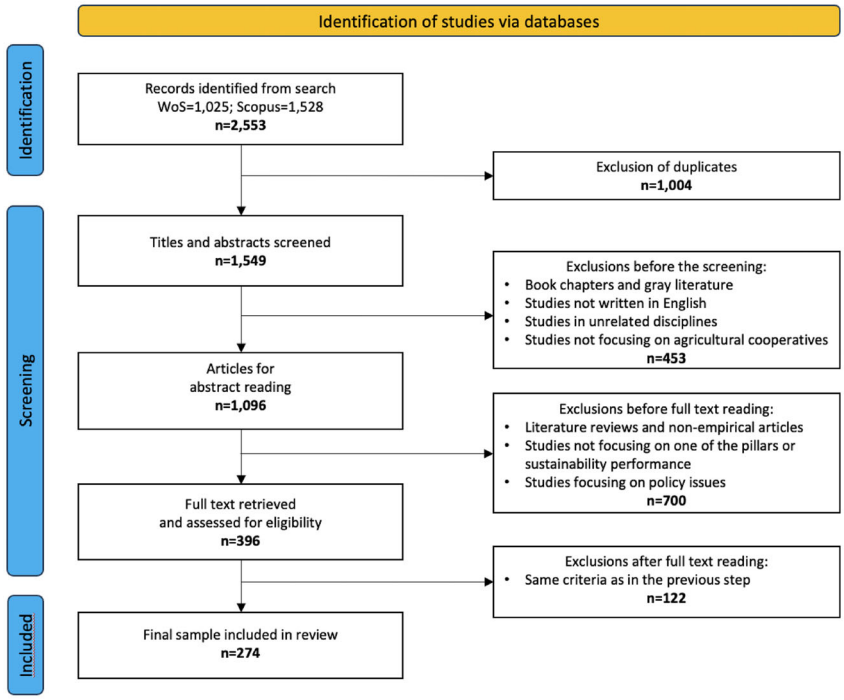

FIGURE 1 The article selection process. *Source*: Own work, based on the PRISMA framework. [Colour figure can be viewed at wileyonlinelibrary.com]

process were discussed regularly by the research team. The screening of articles was done in two steps: screening of abstracts and then screening of full documents. The search yielded 1,025 publications in WoS and 1,528 in Scopus. After removing 1,004 duplicates, 1,549 articles remained. After reading the abstracts, a total of 453 articles were excluded due to the main exclusion criteria (book chapters, working papers, conference proceedings, literature reviews, purely conceptual articles, incomplete articles, non-English articles, unrelated disciplines (e.g., psychology) and non-agricultural cooperatives). Of the 1,096 articles considered for abstract review, 700 were excluded because they were review articles, normative or theoretical articles, or articles not fully focused on cooperative sustainability performance or articles focused on policy issues. The full texts of 396 articles were then reviewed, and 122 were excluded for the same reasons. This process resulted in a final sample of 274 articles. Figure 1 summarizes the article selection process.

Bibliography management was conducted using Zotero, while data extracted from WoS and Scopus were processed using R software, specifically Biblioshiny. Based on these data, a descriptive analysis was performed using publication and citation metrics (Donthu et al., 2021; Linnenluecke et al., 2020). The literature review focused on the articles remaining after the selection process, applying a thematic approach to identify and highlight similarities and differences among the studies (Gega et al., 2024). Following the methodology proposed by Pizzi et al. (2020), we created a taxonomy (Table 1) to describe the sample and delineate the main dimensions of the review across nine levels: (1) dimensions of sustainability performance, (2) focus of the article (cooperative level or member level), (3) theoretical framework (if any), (4) location, (5) production, (6) data collection, (7) methods, (8) variables influencing sustainability performance and (9) findings extracted from the abstracts. During this coding phase, adjustments were made to homogenize the sentences and address any inconsistencies in the database.

TABLE 1 Classification system for analysing the articles.

1. Dimensions of sustainability performance	**6. Data**
Economic–financial	Case/interviews/focus groups
Environmental	Databases
Governance	Survey/questionnaire
Social	Media publication/official statistics/reports/websites
2. Focus	**7. Methods**
Performance of the cooperative	Classification/cluster analysis/typology
Performance of cooperative members	Content analysis
3. Theoretical framework	
	Descriptive statistics
Agency theory	Efficient frontier models (including data envelopment analysis)
Cooperative literature	Regressions (including propensity score matching and structural modelling)
Institutional economics	Other
Social capital	
	8. Variables influencing or related to sustainability performance
Transaction costs	Identity of the cooperative (location, status, age, members, employment, size, etc.)
Other	Identity of cooperative members (location, age, gender, education, size, etc.)
No theory	Economic–financial situation (indebtedness, cash position, costs, profit and profitability, yield, etc.)
4. Location	
	Environment (fertilizers, pesticides, soil preservation, water management)
Africa	Governance (loyalty, management training, participation, trust, etc.)
Asia-Pacific	Social (local engagement, membership, participation, services, etc.)
Central and South America	
	9. Findings (extracted from the abstracts)
Europe	
North America	
World	
5. Production	
Cereals	
Fruits and vegetables	
Wine	
Coffee	
Dairy	
Meat	
Mixed	
Other	

Source: Own work.

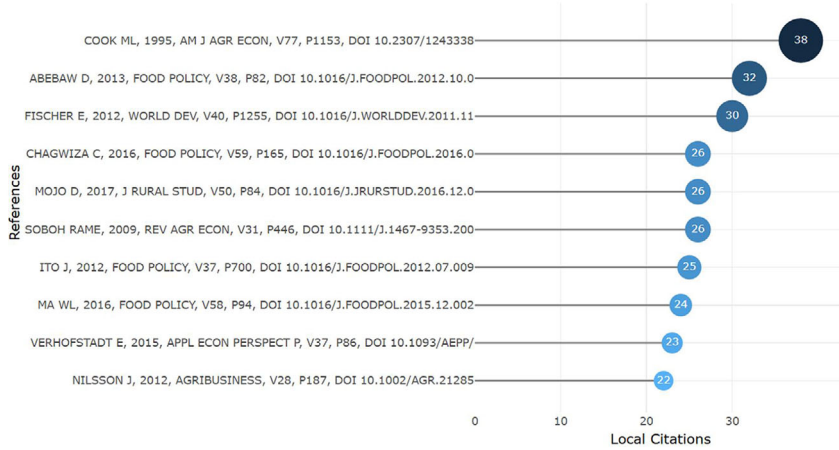

FIGURE 2 **Most cited references**. Source: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

3 | DESCRIPTIVE ANALYSIS OF THE SAMPLE

The literature review begins with a descriptive analysis of the sample. First, key indicators are provided regarding the focus of the study, either on cooperatives or on cooperative members. Then, the most cited authors and the journals of reference in the field are highlighted. In addition, the most used methodologies and the most studied countries and agricultural specializations are presented. Finally, the theoretical frameworks and methodologies for analysing the sustainability performance of agricultural cooperatives are presented.

3.1 | Description of the sample

The final sample consists of 274 articles published between 1991 and 2024 that focus on analysing the sustainability performance of agricultural cooperatives. The full list of references can be found in Appendix 1.

The publications were authored by 701 researchers, with only 20 articles having a single author. Figure 2 displays the most cited references, which we briefly discuss in this paragraph. Cook (1995) stands out in our sample as a cited reference for his neo-institutional analysis of cooperatives. Abebaw and Haile (2013) show that cooperative membership accelerates the adoption of environmentally friendly agricultural technologies, and in the same vein, Fischer and Qaim (2012) highlight the important role of cooperatives in linking their members (smallholders) to the market. Chagwiza et al. (2016) find that cooperatives are strong in promoting technological change and commercialization but weak in providing better prices. Mojo et al. (2017) document that cooperative members have significantly better economic performance compared to their hypothetical outcomes without membership, while non-members would have performed even better if they had joined a cooperative (Figure 3).

The articles are published in different types of journals (Figure 4). The first type includes agricultural economics and management journals (e.g., *Agribusiness, Journal of Rural Studies, Food Policy, Agricultural Economics* and *Agricultural Finance Review*). The second type includes

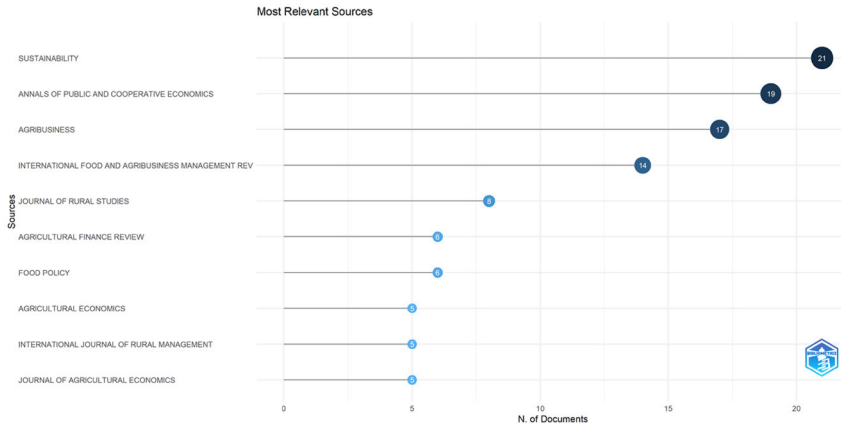

FIGURE 3 Most cited journals. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

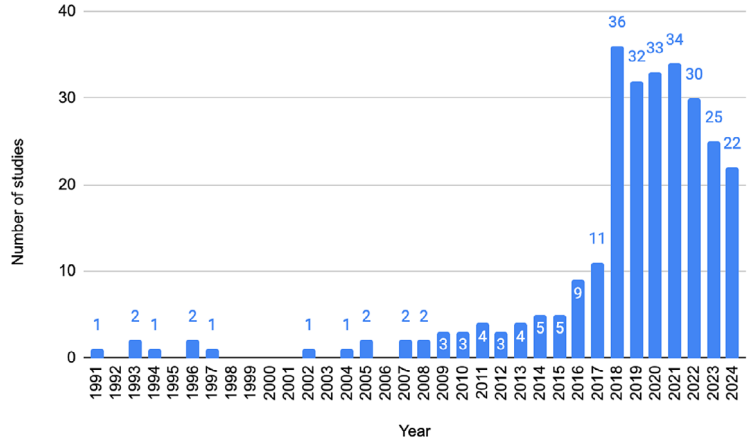

FIGURE 4 Number of publications per year. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

journals that focus on cooperatives and the social economy (e.g., *Annals of Public* and *Cooperative Economics*). The third type includes journals that focus on sustainability issues independent of agriculture or cooperatives (e.g., *Sustainability* and *World Development*).

Interest in the sustainability performance of agricultural cooperatives has evolved over three distinct periods (Figure 4). From 1991 to 2008, there was a low and irregular publication trend, ranging from 0 to 2 studies per year, mainly focused on economic, financial and governance issues. From 2009 to 2017, there was a moderate increase in interest in the topic, ranging from 3 to 11 studies per year, marked by the emergence of the first studies that included environmental and social dimensions. Finally, from 2018 to 2024, a significant increase in publications was recorded, peaking at 36 studies in 2018, followed by a gradual decline to 22 studies in 2024. During this period, the focus of the articles shifted, with less emphasis on economic and financial sustainability and more attention to environmental, governance and social sustainability. The average age of the articles in 2024 is 6.52 years.

A key aspect of this literature review is the identification of two distinct approaches to the analysis of cooperatives as observed in the articles. The first approach focuses on the

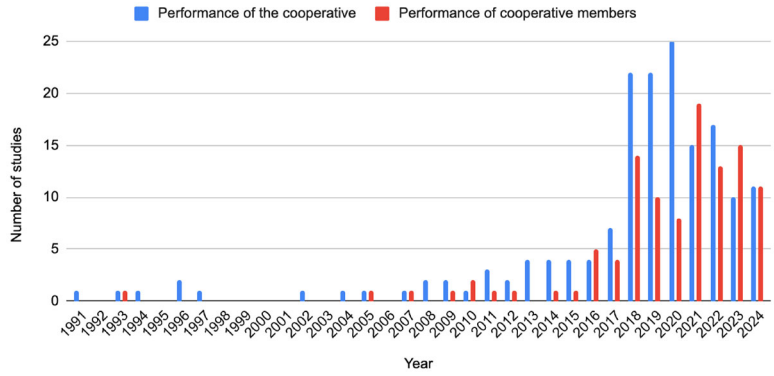

FIGURE 5 Dimensions of sustainability performance considered in the study by focus on the cooperative or its members. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

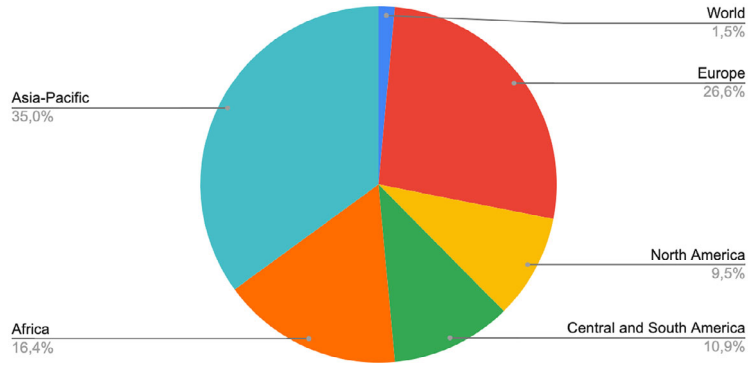

FIGURE 6 Location of the empirical application considered in the studies. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

performance of cooperative members, represented in 111 articles, while the second approach examines the performance of cooperatives themselves, accounting for 167 articles. Four articles examine both topics: Hejkrlik et al. (2023), Jabbouri et al. (2022), Richter and Hanf (2021) and Sadegh and Ghaediyan (2021). Although the majority of articles focus on cooperatives, reflecting a historical trend, the number of studies on cooperatives began to stagnate and subsequently decline after 2018 (Figure 5). Conversely, since 2016, there has been a significant increase in the number of articles addressing the sustainability performance of cooperative members.

It is important to note that the publication dynamics observed since 2016–2017 are partly driven by literature focusing on the performance of cooperative members. Cooperative membership is seen as a key driver of performance, especially in economic and financial terms (see Appendix 2). However, it is clear that environmental and social performance is more emphasized at the member level than at the cooperative level. In other words, while cooperatives can initiate environmental and social initiatives, these actions are primarily aimed at improving the sustainability of their members.

The body of literature on cooperatives is very diverse, reflecting the considerable diversity of agricultural production around the world (Figure 6). In North America and Europe, cooperatives

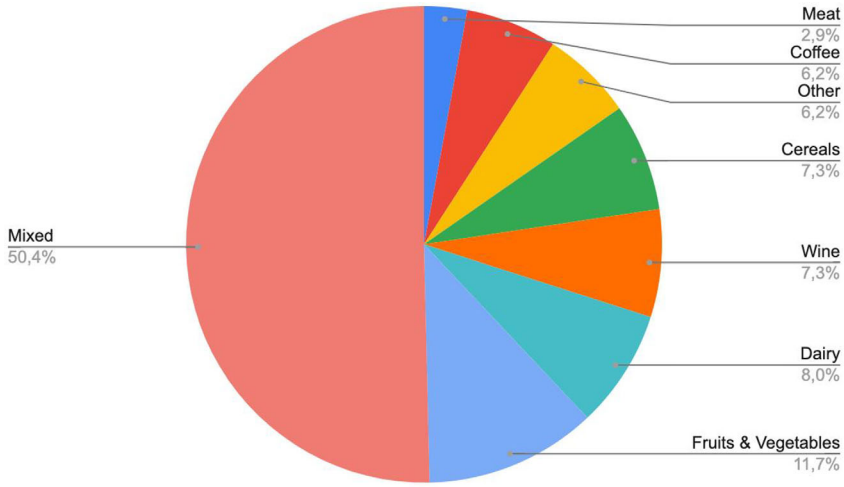

FIGURE 7 Agricultural specializations considered in the studies. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

have a long history and are a fundamental part of the agricultural model, especially in southern countries such as Spain (22 articles), Italy (12 articles) and France (11 articles). In the Asia-Pacific region, especially in China (47 articles), in Africa, especially in Ethiopia (18 articles), and in Central and South America (18 articles in Brazil), cooperatives are promoted by public policies as a means to modernize agriculture. Our sample includes 64 different countries, most of which are the subject of one or two studies. The publication trend shows an increasing number of studies (both in absolute and relative terms) in Africa (from 2 in 2018 to 5 in 2024) and Asia-Pacific (3 in 2017, 14 in 2018 and 13 in 2024), reflecting the growing interest of cooperatives in these regions. In comparison, the number of studies published in Europe (from 10 in 2018 to 1 in 2024) and North America (from 6 in 2018 to none in 2024) decreases significantly.

In terms of agricultural production, the first half of the articles take a country or region as the unit of analysis, thus providing a global sample (Figure 7). The second half of the articles focus on specific products, the most common being fruits and vegetables (32), dairy products (22), cereals (20), wine (20), coffee (17) and meat (8). Since 2018, we have observed an increase in the number of studies focusing on several agricultural products at the same time (2 in 2017, 13 in 2018 and 12 in 2024). Most of the studies on fruit and vegetables and vines were carried out between 2018 and 2022, while studies on dairy products, coffee and cereals are published regularly.

3.2 | Theoretical frameworks and methods for analysing the sustainability performance of agricultural cooperatives

Two trends emerge with respect to theoretical frameworks (Figure 8). First, common theoretical frameworks in economics and management are explicitly referenced in only 102 articles (37%). This proportion aligns with previous studies addressing sustainability management in the context of business (Pizzi et al., 2020; Schaltegger, 2018), and reflects the highly empirical nature of many studies, which may weaken the academic scope of the findings. The most frequently cited theory is the social capital theory (14 articles), which corresponds to the social role of cooperatives

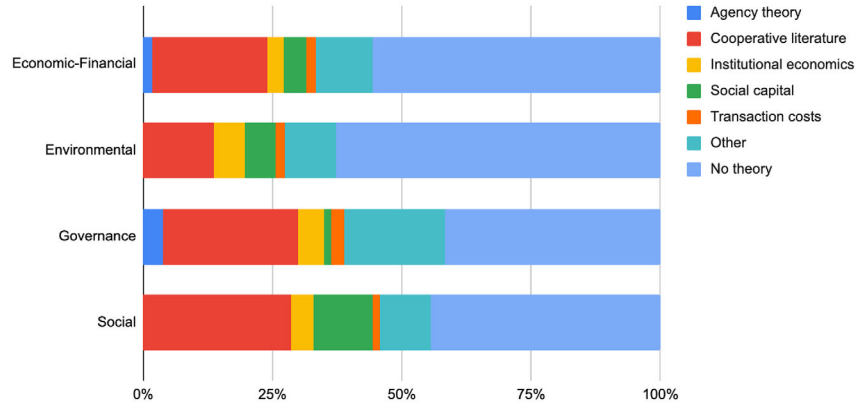

FIGURE 8 Theories mentioned in the article by dimension of sustainability performance. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

for farmers and their wider environment. Additionally, three theories—new institutional economics, agency theory and transaction cost theory—address the governance issues of cooperatives and the relationship between members and management. The second trend is the emergence of a body of literature that focuses exclusively on cooperative-oriented articles (64 articles). This 'cooperative literature' refers to studies that have theorized and modelled the cooperative framework, thus emphasizing the unique characteristics of cooperative organization, management and stakeholder relationships in the market. The growth of this body of literature indicates a gradual increase in academic research devoted to cooperatives. In contrast, 172 articles are purely empirical. While they refer to previous studies, they do not engage with theoretical frameworks or the developing cooperative literature.

The diversity of cooperatives and research topics results in a corresponding variety of methodologies. A significant challenge faced by all studies is data collection. There are only a limited number of databases that focus specifically on cooperatives, most of which are located in Europe and North America. These databases primarily provide economic and financial data for 67 articles. To explore other dimensions of performance, authors must often conduct their own surveys (159 articles) or case studies (110 articles). A significant portion of the articles relies on alternative sources of information, such as existing reports, statistics and interviews with experts. The quality and scope of the data are critical factors in the data analysis process. The majority of articles use quantitative analysis such as regression (200 articles, of which 35 use propensity score matching and 25 use structural equations), classification (49 articles, of which 20 use cluster analysis) or efficient frontier analysis (15 articles). Qualitative articles predominantly use content analysis of interviews (40 articles) and surveys, manually structuring the information gathered from the field. Table 2 lists the most cited articles by dimension of sustainability performance, theoretical framework, data collection and method.

4 | CHARACTERIZATION OF THE SUSTAINABILITY PERFORMANCE OF AGRICULTURAL COOPERATIVES

Based on our analysis of the literature, we characterize the sustainability performance of agricultural cooperatives according to a number of criteria. Figure 9 summarizes how the sustainability

TABLE 2 Most cited articles by dimension of sustainability performance, theoretical framework, data collection and method.

1. Dimensions of sustainability performance			
Economic–financial	**Environmental**	**Governance**	**Social**
Bernard and Spielman (2009)	Ajates (2017)	Barraud-Didier et al. (2012)	Ajates (2017)
Chagwiza et al. (2016)	Ajates (2020)	Benos et al. (2016)	Ajates (2020)
Kyriapoulos et al. (2004)	Bro et al. (2019)	Bernard and Spielman (2009)	Bernard and Spielman (2009)
Liang et al. (2015)	Fantin et al. (2017)	Bijman et al. (2013)	Fiore et al. (2020)
Ma and Abdulai (2017)	Ofori et al. (2019)	Bijman et al. (2014)	Ma and Abdulai (2016)
Mojo et al. (2017)	Ma et al. (2018)	Couderc and Marchini (2011)	Ma and Zhu (2020)
Pennersorfer and Weiss (2013)	Marcis et al. (2019)	Chagwiza et al. (2016)	Manda et al. (2020)
Soboh et al. (2012)	Mojo et al. (2015)	Hansen et al. (2002)	Mojo et al. (2015)
Verhofstadt and Maertens (2014)	Zhou et al (2018)	James and Sykuta (2005)	Mojo et al. (2017)
Zhang et al. (2020)	Zhou et al. (2019)	Shumeta and D'Haese (2016)	Stattman and Mol (2014)
2. Theoretical frameworks			
Agency theory	**Cooperative literature**	**Institutional economics**	**Social capital**	**Transaction costs**
Bijman et al. (2013)	Barraud-Didier et al. (2012)	Ajates (2020)	Jia and Xu (2021)	Marcos-Matas et al. (2018)
Cadot (2015)	Bijman et al. (2013)	Garcia-Lorenzo et al. (2021)	Liang et al. (2015)	Nilsson et al. (2020)
Hakelius and Hansson (2016)	Chagwiza et al. (2016)	Grashuis et al. (2018b)	Liang et al. (2018)	Sanchez-Navarro et al. (2019)
Lucas-Martinez et al. (2020)	Grashuis (2018b)	Liang et al. (2021)	Meador and O'Brien (2019)	Sanchez-Navarro et al. (2024)
Valette et al. (2018)	Hansen et al. (2002)	Leszcynska and Thénot (2015)	Mojo et al. (2015)	Verhofstadt and Maertens (2014)
Verhees et al. (2015)	Kyriapoulos et al. (2004)	Tschopp et al. (2018)	Mojo et al. (2017)	Yang et al. (2022)
Verhofstadt and Maertens (2014)	Manda et al. (2020)	Valette et al. (2018)	Xu et al. (2018)	Zhong et al. (2018)
	Mojo et al. (2015)	Verhees et al. (2015)	Yu and Nilsson (2018)	
	Mojo et al. (2017)	Xaba et al. (2020)	Yu and Nilsson (2019)	
	Soboh et al. (2012)	Zhang et al. (2020)	Zhou et al. (2018)	
3. Data collection			
Case	**Database**	**Survey**	**Report**
Bijman et al. (2013)	Arcas et al. (2011)	Bernard and Spielman (2009)	Ajates (2017)
Bijman et al. (2014)	Couderc and Marchini (2011)	Bijman et al. (2013)	Ajates (2020)
Chibanda et al. (2009)	Grashuis (2018a)	Chagwiza et al. (2016)	Akwabi-Ameyaw (1997)
Couderc and Marchini (2011)	Guzman and Arcas (2008)	Hansen et al. (2002)	Bijman et al. (2013)
Fiore et al. (2020)	Kalogeras et al. (2013)	Kyriapoulos et al. (2004)	Bijman et al. (2014)
Liang et al. (2015)	Milford (2012)	Ma and Abdulai (2016)	Fiore et al. (2020)
Liu et al. (2019)	Pennersorfer and Weiss (2013)	Ma et al. (2018)	Grashuis (2018b)
Snider et al. (2017)	Pokharel et al. (2019)	Mojo et al. (2017)	Milford (2012)
Stattman and Mol (2014)	Pokharel et al. (2020)	Verhofstadt and Maertens (2014)	Sultana et al. (2020)
Zhong et al. (2018)	Soboh et al. (2012)	Zhang et al. (2020)	
Classification	**Content analysis**	**Efficient frontier**	**Regression**
Benos et al. (2016)	Ajates (2017)	Arcas et al. (2011)	Bernard and Spielman (2009)
Chibanda et al. (2009)	Ajates (2020)	Brandano et al. (2019)	Chagwiza et al. (2016)
Figueiredo and Franco (2018)	Bijman et al. (2013)	Guzman and Arcas (2008)	Kyriapoulos et al. (2004)
Hansen et al. (2002)	Bijman et al. (2014)	Lin et al. (2022)	Ma and Abdulai (2016)
Kalogeras et al. (2013)	Fiore et al. (2020)	Neupane et al. (2022)	Ma and Abdulai (2017)

(Continues)

TABLE 2 (Continued)

Classification	Content analysis	Efficient frontier	Regression
Mozas-Moral et al. (2020)	Galt et al. (2019)	Olagunju et al. (2021)	Ma et al. (2018)
Sultana et al. (2020)	Grashuis (2018b)	Soboh et al. (2012)	Manda et al. (2020)
Swagemakers et al. (2019)	Haddad et al. (2017)	Yobe et al. (2020)	Mojo et al. (2017)
Verhees et al. (2015)	Marcis et al (2019)	Yu and Huang (2020)	Verhofstadt and Maertens (2014)
Zhong et al. (2018)		Zamani et al. (2019)	Zhang et al. (2020)

Key: For each article, the 10 most cited references are listed in descending order of citation.

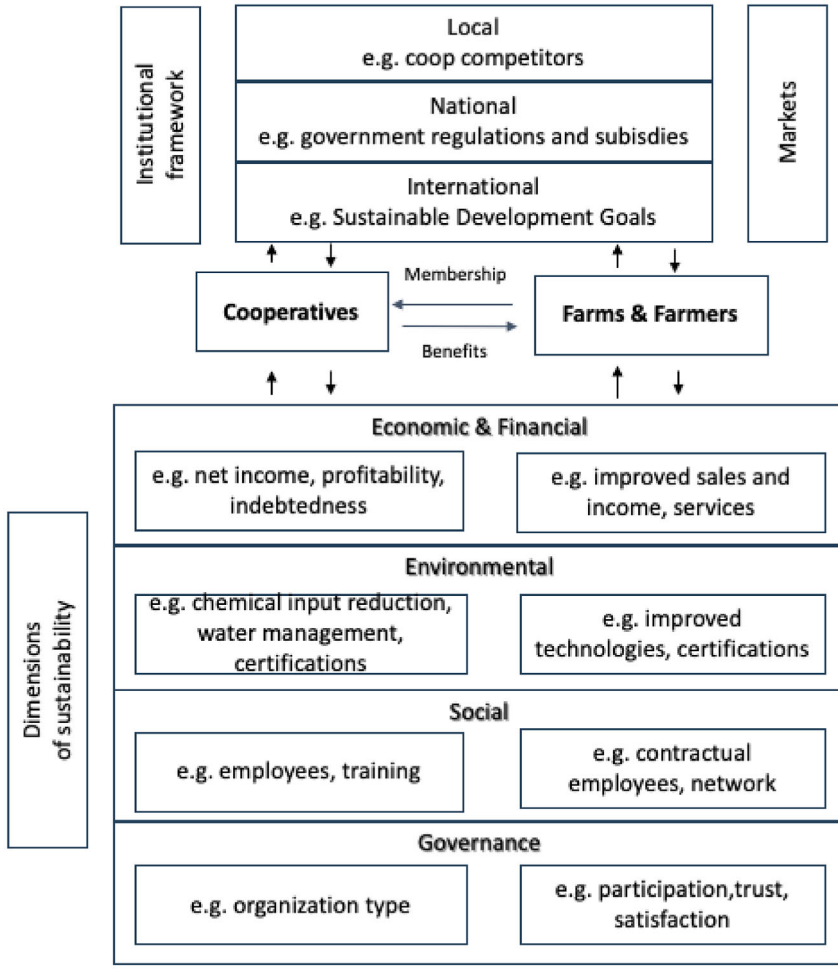

FIGURE 9 Conceptualization of the sustainability performance of agricultural cooperatives. *Source*: Own work. [Colour figure can be viewed at wileyonlinelibrary.com]

performance of cooperatives has been addressed in the literature. This model highlights the four dimensions of sustainability—economic and financial, environmental, governance and social—along with their respective components. The arrows in the figure illustrate the interactions between cooperatives, their environment and their performance. When a cooperative promotes and communicates sustainable practices externally, such as through certification, it simultaneously improves its image and performance (Castilla-Polo et al., 2017).

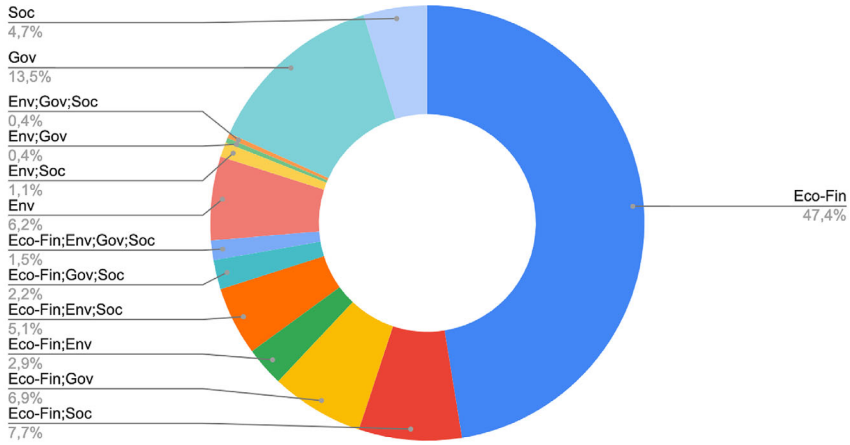

FIGURE 10 *Dimensions of sustainability performance and their combinations considered in the studies. Source*: Own work, based on the final selection of articles. Key: 'Eco-Fin', 'Env', 'Gov' and 'Soc', respectively, denote the economic and financial, environmental, governance and social dimensions of performance. [Colour figure can be viewed at wileyonlinelibrary.com]

The figure also presents, in two columns, the primary focus on the sustainability performance of the cooperative itself and that of its members. Indeed, cooperatives can strive for performance on their own, through their internal organization. In this case, the performance indicators focus mainly on governance and the economic and financial situation of the cooperative. Moreover, the performance of cooperatives can be assessed in terms of the quality of the relationship they have with their members and the added value they provide to farms. Whether they are simply members or active participants in the cooperative, farmers generally benefit from a number of advantages in line with the main dimensions of sustainability: the power to steer cooperative decisions, especially in a climate of trust; higher or more secure incomes; access to privileged services and technologies that can support their agri-environmental transition.

Finally, cooperatives and their members are part of the competitive environment of food supply chains (Estevez et al., 2018; Susanty et al., 2018) and in generally volatile markets. At different scales (local, national and international), public institutions play a key role, not only by encouraging the development of cooperatives but also by steering their actions towards more sustainable practices. Government intervention in cooperatives can improve market functioning and expansion (Estevez et al., 2018; Yang et al., 2018), provided that its control over cooperatives is not excessive (Alvarez, 2005). Public subsidies can also promote women's membership in cooperatives (Minah, 2022) and help cooperatives renew their practices towards sustainability (di Paula da Silva Pinheiro et al., 2022).

4.1 | Dimensions of sustainability performance considered in the studies

Our review of the literature indicates that the economic and financial dimension of sustainability performance is the most frequently addressed across all studies (Figure 10). Specifically, 202 out of 274 studies (73.7%) focus on this dimension either exclusively (47.4%) or in combination with other dimensions (26.3%), mainly the social (16.4%) and governance (10.6%) aspects of

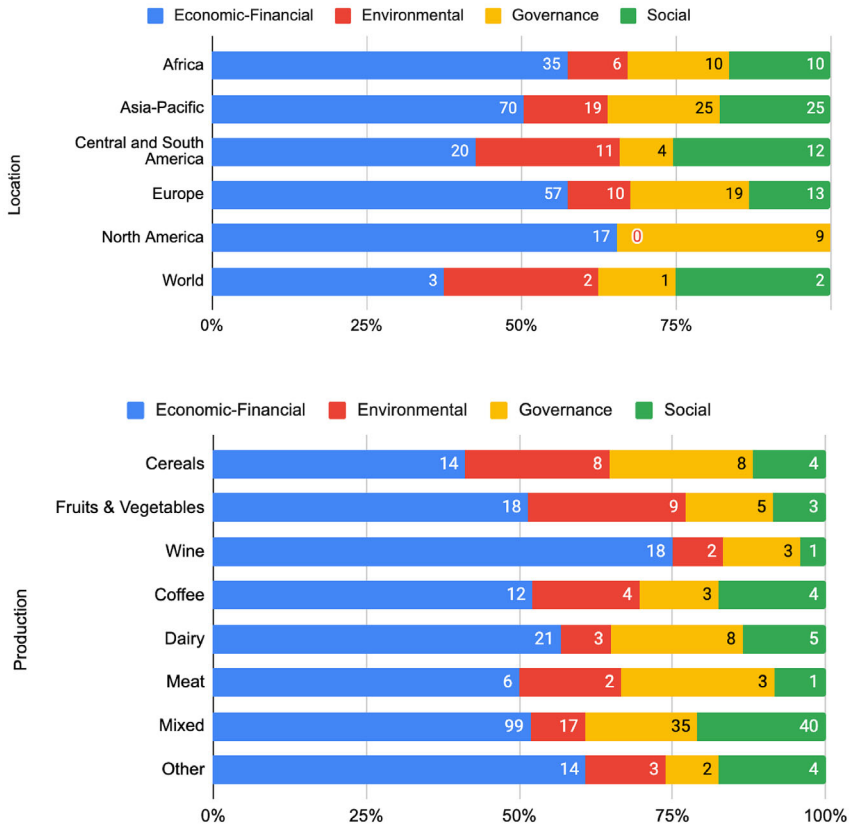

FIGURE 11 Dimensions of sustainability performance by location and production. *Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

performance. Governance is examined either independently (13.5%) or in conjunction with the economic and financial dimension, but rarely with another performance component on its own. The same pattern holds for the environmental and social dimensions of performance. Twenty-one studies consider three of the four pillars of sustainable development together, while only four studies consider all four pillars simultaneously. These findings suggest that sustainable performance is rarely approached holistically. Instead, it is typically analysed through the lens of one or two dimensions, with a predominant focus on economic and financial sustainability.

The predominance of the economic and financial dimension is also evident when two additional aspects are considered, the location of the study and the production considered (Figure 11), which indicates a strong trend. In terms of location, it is notable that articles focusing on North America tend to address only the economic–financial and social dimensions, largely neglecting environmental considerations. In contrast, the latter two dimensions are more thoroughly examined in other regions. Furthermore, disparities in agricultural production are observed, with a particular emphasis on the economic and financial dimensions in wine production. The environmental dimension is more likely to be included in studies that examine cooperatives in different production sectors. Consequently, studies with a broader productive scope are best able to provide insights into the sustainable performance of cooperatives.

It is noteworthy that the dimensions of sustainability performance considered in the literature have evolved over time. Figure 12 shows two distinct periods. Until 2013, before the significant

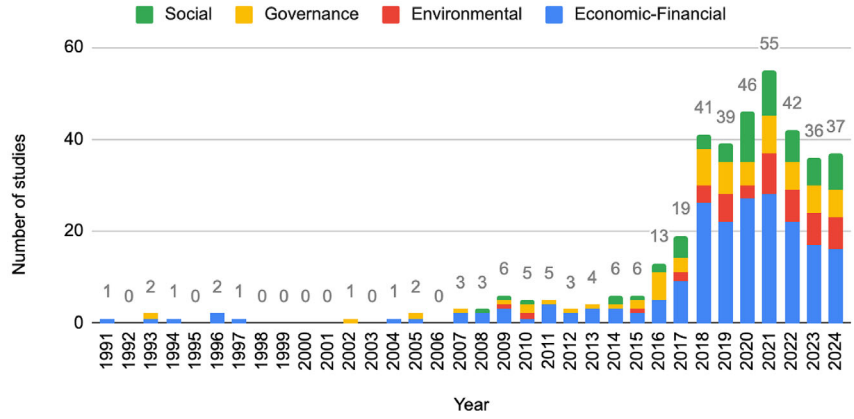

FIGURE 12 *Dimensions of sustainability performance by year. Source*: Own work, based on the final selection of articles. [Colour figure can be viewed at wileyonlinelibrary.com]

increase in published articles, almost all studies focused on economic–financial and governance performance. Thereafter, the focus of articles diversified, although the economic and financial dimension continued to dominate. In 2009, the first articles on the environmental dimension (Haque et al., 2009) and the social dimension (Bernard & Spielman, 2009) were published.

4.2 | Cooperatives' own sustainability performance (167 articles)

The own sustainability performance of cooperatives was considered in 167 articles. It is interesting to note that the performance of cooperatives is largely studied in terms of economic and financial aspects. The governance dimension has been considered for a long time, although the number of articles on the topic has been limited. The social and environmental dimensions have received less attention at the cooperative level, although the number of articles devoted to these topics has increased over time. A summary of the main issues addressed in relation to cooperatives' own sustainability performance is presented in Appendix 3.

The economic and financial performance of cooperatives is examined through four main aspects: cooperative structure, organizational and management practices, financial management and a comparison of the unique characteristics of cooperatives versus investor-owned firms.

The first aspect is cooperative structure. Size is a critical factor in the competitive landscape, both among cooperatives and in relation to investor-owned firms, especially in a low-margin environment (Mozas-Moral et al., 2021; Pokharel et al., 2019). In addition, the age of cooperatives may be conducive due to reputation effects (Fanasch & Frick, 2018). Economic performance also varies significantly across the different legal forms of cooperatives that exist around the world (Verhofstadt & Maertens, 2014; Vozarova et al., 2019).

The second aspect focuses on the organization and general management of cooperatives. Ajates (2020) highlights that agricultural cooperatives face intense competition from different actors in the food supply chain, both upstream, where they help farmers purchase inputs, and downstream, where they facilitate the sale of agricultural products. To remain competitive, cooperatives must adapt their market organization by implementing strategies such as differentiated pricing or supply contracts (Benos et al., 2016), diversifying their activities (Martins et al., 2019; Mauget & Declerck, 1996), promoting vertical integration (Zhong et al., 2018) or

developing internationalization strategies (Couderc & Marchini, 2011; Mozas-Moral et al., 2021). Many cooperatives are encouraged to restructure (Benos et al., 2016) or merge (Cadot, 2015) in order to improve performance.

The third aspect focuses on the financial management of cooperatives. Like all businesses, most cooperatives are motivated by the goal of creating value (Couderc & Marchini, 2011), which depends in part on effective cost control (Grashuis, 2018a). Financing is critical to the performance of cooperatives, providing the necessary resources for investment (Galati et al., 2019; Grashuis, 2020a) and supporting their ability to innovate (Chagwiza et al., 2016). However, cooperatives often face high levels of debt due to low returns and challenges in raising capital (Smart et al., 2019). This situation creates financial risk (Grashuis & Cook, 2018), which poses a threat to the sustainability and longevity of cooperatives (Valette et al., 2018).

The fourth aspect concerns the comparison between cooperatives and investor-owned firms (IOFs). Some studies (Brandano et al., 2019; Deng et al., 2021; Vozarova et al., 2019) find that IOFs tend to outperform cooperatives in economic terms, largely due to better management practices. Conversely, some studies find no significant difference in performance between the two types of organizations (Ferrer et al., 2019; Hind, 1994), while other studies suggest that cooperatives may outperform IOFs (Grashuis & Magnier, 2018; Pennerstorfer and Weiss, 2013).

Cooperatives improve their environmental performance by engaging in various environmental actions, such as promoting organic farming (Mozas-Moral et al., 2021), implementing conservation practices (di Paula da Silva Pinheiro et al., 2022) and diversifying agricultural activities (Tschopp et al., 2018).

Beuren et al. (2020) and Mozas-Moral et al. (2020) highlight the importance of integration and information sharing within cooperatives as mechanisms to promote innovation and advance the environmental dimension of CSR.

The role of cooperatives in environmental performance is debated. While Deng et al. (2021) find that IOFs outperform cooperatives in terms of environmental impact, Callagher et al. (2022) present evidence suggesting the opposite.

The literature emphasizes that cooperatives can only achieve sustainability if their members are active and well-informed about the cooperative's development (Chibanda et al., 2009; Florea et al., 2019; Verhees et al., 2015). Without this engagement, members may lack motivation to participate (Chhinh et al., 2022) or act in their own self-interest, leading to opportunistic behaviours such as side selling (Brandao & Breitenbach, 2019; Shumeta et al., 2018).

The internal organization of a cooperative has a significant impact on its performance (Kontogeorgos et al., 2018). In particular, the size of the board of directors matters (Franken & Cook, 2019; Hakelius, 2018; Iliopoulos et al., 2022). Furthermore, the education and training of board members are crucial for the growth of cooperatives (Ibourk & El Aynaoui, 2023; Hejkrlik et al., 2023; Huhtala et al., 2020; Jankelova & Joniakova, 2021). The diversity of board members in terms of age and gender can also affect the performance of agrifood cooperatives (Melia-Marti et al., 2020).

Modernizing membership structures and governance practices is an effective strategy to improve cooperative success (Bijman et al., 2013). For example, agricultural cooperatives in Europe have implemented innovations in their internal governance structures to optimize the size and composition of the board of directors and the distribution of decision-making rights between supervisors and managers (Bijman et al., 2014). In the case of 'new-generation cooperatives' in the United States, farmers and outside investors contribute capital to the cooperative in exchange for access to the cooperative's intangible assets, such as brand equity (Grashuis, 2019; Grashuis & Cook, 2018).

Cooperatives fundamentally ground their social performance in local roots (Filippi, 2014). Grassroots collective action values local resources and fosters interdependence among cooperative members and between members and consumers (Gezahegn et al., 2020a). This effect is particularly pronounced in community-initiated cooperatives compared to member-initiated cooperatives (Gezahegn et al., 2020b; Jia & Xu, 2021). In addition, cooperatives serve to protect farmers from unfair trade practices at the local level (Di Mercantonio et al., 2022).

The number of people associated with or directly employed by cooperatives underscores their importance to society (Da Silva et al., 2022). However, the diversity of members poses a significant challenge to the sustainability of cooperatives (Elliott et al., 2018), particularly in terms of member satisfaction (Grashuis & Cook, 2021), allocation of control rights (Liang et al., 2022) and issues related to opportunism (Sanchez-Navarro et al., 2019; Sanchez-Navarro et al., 2024).

4.3 | Sustainability performance of cooperatives through their relationship with members (111 articles)

In 111 articles from our literature review, the performance of cooperatives is not assessed at the level of the cooperative itself, but rather in terms of its relationship with its members, the farms. We find that performance-related considerations focus primarily on governance, economics and finance. Conversely, social and environmental considerations become more prominent at this relational level. A summary of the key issues raised about the sustainability performance of cooperatives through their interactions with their members can be found in Appendix 4.

Participation in agricultural cooperatives is generally associated with higher yields and improved technical efficiency for farmers (Ahado et al., 2021; Ma & Abdulai, 2016, 2017; Ma et al., 2018). Cooperatives play an important role in building farmers' capacity, promoting the adoption of advanced technologies and inputs and increasing overall productivity (Manda et al., 2020; Ortega et al., 2019). However, some studies report no significant or even negative impact of cooperative membership on technology adoption (Zanuzzi et al., 2021; Zhang et al., 2020).

The benefits of cooperative membership also extend to farm income (Dhakal et al., 2021; Grashuis & Higuchi, 2023; Twumasi et al., 2021; Wang et al., 2019, 2021b) and household income (Hu & Zhang, 2024; Liu et al., 2019; Wu et al., 2023; Zheng et al., 2023). The payment that cooperatives provide to their members is a critical factor in motivating farmers to produce high-quality products (Barry & Rousselière, 2021). However, the level of this payment often depends on the market power of the cooperatives (Liang & Wang, 2020).

Cooperative membership positively influences the adoption of sustainable environmental practices (Donkor et al., 2023) by first promoting efficient resource use (Olagunju et al., 2021; Mojo et al., 2015) and encouraging the diffusion of innovative practices in the field (Callagher et al., 2022). It serves as a critical determinant of practices that enhance water conservation (Bro et al., 2019; Luzzani et al., 2021) and improve soil management (Ma et al., 2018; Tabe-Ojong, 2022).

The environmental impacts of cooperatives occur primarily at the cultivation stage, particularly through the use of fertilizers and pesticides (Fantin et al., 2017). Farmers who are members of agricultural cooperatives benefit from technical support and are more likely to adopt integrated pest management (Liu et al., 2022) and use organic labels than non-members (Groot-Kormelinck et al., 2022; Kuan et al., 2021; Liu et al., 2022; Qiao et al., 2018).

In addition, the adoption of environmentally friendly technologies appears to increase the competitiveness of members, particularly in terms of price, yield and income (Dong & Liang, 2023; Sellare et al., 2020; Wang et al., 2021a). Cooperative membership also has a positive effect on farm-level innovation (Marcos-Matas et al., 2018) and helps reduce both the likelihood and the rate of land abandonment (Ma et al., 2022; Ma & Zhu, 2020; Pinheiro et al., 2021).

Farmers' participation in cooperative governance improves their individual performance (Azadi et al., 2010; Breitenbach & Brandao, 2021). As a result, various stakeholders, including governments (Hariance et al., 2024) and NGOs (Balasubramanian et al., 2024), promote membership and active participation in cooperative activities.

Cooperative development is shaped by social and human factors related to member satisfaction, such as the quality of the relationship between the cooperative and its members and among members (Marcos-Matas et al., 2018), training and experience (Mojo et al., 2015) and issues of power and control (Figueiredo & Franco, 2018). When satisfaction is achieved, it often translates into loyalty, especially when farmers perceive the influence of the cooperative on value creation (Ferraz et al., 2018).

Trust represents the 'affective' relationship between a cooperative and its members (Barraud-Didier et al., 2012). While trust cannot be guaranteed spontaneously (Tadesse & Kassie, 2017), it can develop through recommendations from friends and family (Meador & O'Brien, 2019; Twumasi et al., 2021), personalized services (Galt et al., 2019), and the economic performance of cooperatives (Hernandez-Espallardo & Arcas-Lario, 2008). Finally, high levels of trust encourage members to support cooperatives even when outcomes are uncertain (Grashuis & Cook, 2019; Nilsson et al., 2020).

Farm size and land ownership positively influence members' decisions to use agricultural cooperatives as marketing channels (Liu et al., 2019; Minah, 2022; Mojo et al., 2017). In addition, older and more educated farmers are more likely to join cooperatives (Minah, 2022; Mojo et al., 2017; Twumasi et al., 2021). The question of whether cooperatives effectively reduce the poverty gap remains controversial, as while the poorest and smallest farmers tend to benefit the most from cooperative membership (Bernard & Spielman, 2009; Wassie et al., 2019), they often lack effective access to these cooperatives (Geffersa, 2024).

Cooperatives provide a range of services that are highly valued by producers (Chhinh et al., 2022; Neupane et al., 2022; Ofori et al., 2019). These services mainly focus on economic aspects (Breitenbach & Brandao, 2021), especially with respect to access to inputs (Dhakal et al., 2021; Yu & Nilsson, 2018; Yu & Nilsson, 2019) and access to finance (Cadot & Ugaglia, 2018; Ezeh & Abubakar, 2019). However, these services are highly controversial due to their heterogeneity (Sebhatu et al., 2021), unequal access for members even within the same cooperative (Shumeta & D'Haese, 2016) and the risk that cooperatives may prioritize these services at the expense of financial goals (Tadesse et al., 2019) and governance (Yobe et al., 2020; Yu & Huang, 2020).

5 | RESEARCH GAPS

The literature review reveals that several critical issues related to the sustainability performance of cooperatives remain underexplored or inadequately addressed in existing research. This section identifies the key issues related to the dimensions of sustainability performance and aligns them with relevant theoretical frameworks, empirical analyses and the institutional framework of the United Nations SDGs.

5.1 | Theoretical framework

From an economic and financial perspective, the literature emphasizes the special relationship between cooperatives and their members but does not address in detail the level of payments of cooperative members. While cooperatives are weak in offering better prices compared to IOFs (Chagwiza et al., 2016), most studies continue to focus on farm income in general, without analysing in detail the share that comes from the cooperative. However, there are frictions between the cooperatives and their members. In fact, cooperatives are threatened by side selling in developing countries (Shumeta et al., 2018). In developed countries, the structure of cooperatives is becoming more market-oriented and complex, with an increase in their size and scope of activities, opening up to other shareholders and the existence of subsidiaries (Bijman, 2010). If cooperatives lose their core values and principles, they may even find themselves threatened by degeneration over time (Bretos et al., 2020).

In addition, the risks associated with cooperative activities have not been thoroughly examined, and existing studies yield different results. For example, Pokharel et al. (2019) show that risk has a positive impact on the economic performance of cooperatives, while Singh et al. (2019) reach the opposite conclusion. Both cooperatives and their members face significant exposure to climate and market risks that threaten their sustainability. While there is some research on the survival of cooperatives, their practical ability to address these challenges remains under-examined.

From an environmental perspective, existing studies tend to focus on specific aspects such as organic certification and soil and water conservation. In particular, there is a lack of research focusing on climate-related issues and the adaptation strategies of cooperatives and farmers in response to climate change. To date, none of the studies have considered environmental performance indicators that could be directly applied to farms and cooperatives. In addition, most environmental studies focus on farms that are members of cooperatives, overlooking the fact that cooperatives, as businesses, have the capacity to implement environmentally friendly practices on their own. Finally, the theoretical frameworks used to assess environmental performance are often inadequate or, at best, derived from economic performance metrics. Theories such as 'natural capital theory' (Ghauri et al., 2022) and 'stakeholder theory' (Iliopoulos et al., 2022) could be effectively used for this purpose.

In the governance dimension of sustainability, the internal functioning of cooperatives is often considered less critical than their ability to generate profits. Key factors related to the composition of the board of directors have not been adequately addressed. For example, the role of young and female directors deserves more attention from an inclusion perspective. In addition, there is a lack of studies that focus specifically on women's cooperatives (Vakoufaris et al., 2007). Given the existence of different legal and organizational models of cooperatives (e.g., those with or without external investors and those with or without public intervention), an international comparison of the effectiveness of their governance structures would be highly relevant. However, very few studies have examined such international comparisons.

The social dimension seems to be the least explored area of research on the sustainability performance of cooperatives. By their very nature, cooperatives are an integral part of the social economy, but their creation and growth should not be taken for granted. The relationship and trust between the cooperative and its members are constantly challenged by competition from alternative models, such as investor-owned businesses. In developed countries, emerging challenges such as farm consolidation and generational renewal raise the question of how to adapt the cooperative model to these new dynamics. To date, this issue has not been adequately addressed in the literature.

5.2 | Empirical analysis

Each dimension of the sustainability performance of agricultural cooperatives is approached differently in empirical analyses (Appendix 5). The economic and financial dimension traditionally benefits from established databases, as cooperatives, being large enterprises, are often required by law in most countries to publish their financial accounts. Where data on cooperatives are not available or relate specifically to cooperative members, surveys are used. For the other dimensions, the lack of comprehensive databases requires researchers to conduct targeted surveys and case studies. Supplementary information from reports can enhance data collection efforts.

The literature review reveals a notable lack of use of databases for the governance dimension, despite the fact that such information is typically collected on a large scale by specialized firms in conjunction with accounting data. To our knowledge, no databases currently exist for the social and environmental dimensions of agricultural cooperatives, which explains why studies in these areas tend to rely on surveys or small, localized samples of cooperatives. This limitation raises concerns about the generalizability of the results obtained from these smaller-scale studies.

A direct consequence of data collection is the methodology used. For all types of sustainable governance, authors typically rely on descriptive statistics and econometric regressions, using surveys and existing databases. Econometric analysis and efficient frontier methods are more often used for the economic and financial dimension due to the availability of robust databases. In contrast, classifications and content analysis are more commonly used to examine the environmental, governance and social dimensions. The expansion of databases in the latter areas would increase the use of quantitative techniques.

Our analysis shows that the existing literature on the sustainability of agricultural cooperatives treats the agricultural sectors heterogeneously. Studies often consider social performance across a range of specializations rather than focusing on specific ones, while the opposite trend is observed for the environmental dimension. Furthermore, there is a notable overrepresentation of cereals, coffee and fruits and vegetables in studies that examine environmental impacts. In contrast, dairy products and wine are more often discussed in the context of the economic, financial and governance dimensions, with less emphasis on their social and environmental aspects. Given the significant environmental impacts associated with these sectors—such as pesticide use in wine production and greenhouse gas emissions in dairy farming—they deserve a more comprehensive examination.

In terms of publication dynamics, it is noteworthy that since 2018, there has been a sharp increase in studies focusing on the Asia-Pacific region, especially China (Appendix 6). In contrast, the number of studies devoted to Europe has fallen dramatically, and those focusing on North America—almost exclusively the United States—have virtually disappeared. The volume of research devoted to Africa and Central and South America has remained stable. It is important to note, however, that while many countries are covered in the literature, few outside of China receive regular attention. This lack of sustained monitoring hampers the ability to examine specific countries in detail, particularly across all dimensions of sustainability performance. Consequently, future studies would benefit from focusing on selected countries to provide a comprehensive overview of the sustainability performance of agricultural cooperatives. Regarding the agricultural specializations addressed in the literature, the significant increase in publications since 2018 has allowed for a greater diversity of topics. Nevertheless, the recent decline in publications affects all specializations. In particular, studies on wine production have completely disappeared in 2023 and 2024.

5.3 | Institutional framework

Despite the increasing emphasis on sustainable development issues and their incorporation into public policy, the literature on the sustainability performance of agricultural cooperatives appears to be largely overlooked. Out of 274 articles reviewed based on titles, keywords and abstracts, only five articles explicitly refer to the SDGs: Donkor et al. (2023), Jayaraman et al. (2024), Mourya and Mehta (2021), Mozas-Moral et al. (2020) and Mozas-Moral et al. (2021). However, many SDG dimensions are implicitly addressed in the articles from our literature review.

A full-text analysis aligned with these goals reveals which topics are covered most extensively, particularly those related to cooperative members (see Appendix 7 for the full list): Innovation and infrastructure (SDG 9: 23 articles), Quality education (SDG 4: 22 articles), Responsible consumption and production (20 articles), No poverty (SDG 1: 18 articles), Sustainable cities and communities (SDG 11: 17 articles). However, several important issues receive no or minimal attention, such as Zero hunger (SDG 2), Affordable and clean energy (SDG 7), Decent work and economic growth (SDG 8), Reduced inequalities (SDG 10), Climate action (SDG 13), Life below water (SDG 14) and Life on land (SDG 15). These gaps highlight important areas of sustainable development in which cooperatives could contribute meaningfully.

6 | CONCLUSION AND RESEARCH PERSPECTIVES

The performance of agricultural cooperatives in terms of sustainable development is increasingly recognized as a critical issue, particularly as ESG aspects are gaining prominence beyond mere economic and financial performance. Agricultural cooperatives are deeply rooted in their territories and aim to add value to their members' production, foster social capital, promote innovation and environmentally responsible practices, and involve their members in governance. This unique user–owner model positions cooperatives at the forefront of sustainability performance issues, as they significantly influence the outcomes for their members, who serve as both capital providers and suppliers or customers.

A rapidly growing body of academic literature examines the sustainability performance of agricultural cooperatives from a number of perspectives. Building on this literature, it seems particularly interesting to understand how cooperatives implement sustainable practices internally and towards their farmer-members. Therefore, this article contributes by conducting a systematic review of the literature to analyse the concept of sustainability performance as applied to agricultural cooperatives and its implications. Using broad search criteria and a selection process, we identified 274 articles that addressed at least one of the internationally recognized dimensions of sustainability: economic and financial, environmental, governance and social.

We then conducted a thematic analysis to identify the performance dimensions considered, the theoretical frameworks used, the methodologies employed, the countries and sectors covered and the findings. This work provides a comprehensive overview, highlights key findings, identifies research gaps and outlines perspectives for future academic studies, which we detail below.

This work provides original insights into the sustainability performance of agricultural cooperatives. In particular, the economic and financial dimension appears to be central to the sustainability of agricultural cooperatives, mostly considered alone or in conjunction with the ESG dimensions. Historically, governance performance has been a key objective of the cooperative model, serving as a mechanism to improve the economic performance of both agricultural

cooperatives and their members. Until 2018, the social and environmental dimensions received comparatively less attention; however, the number of studies exploring these areas has rapidly increased. Importantly, recent research tends to integrate multiple dimensions of sustainability performance, reflecting a more systematic approach to this complex concept.

Another important finding is that the concepts of performance and sustainability are not consistently defined by different authors in the literature, which contributes to the variability in how sustainability performance is conceptualized across studies. Improving the theoretical framework of these analyses could broaden the scope of research focusing on the environmental and social dimensions of performance. Theories such as natural capital theory (Ghauri et al., 2022) and stakeholder theory (Iliopoulos et al., 2022) could be used effectively to achieve this goal.

It is also noteworthy that the literature covers a wide range of countries and agricultural products, which enriches the analysis of cooperatives but may limit the generalizability of the findings. While studies focusing on the economic and financial dimensions often use databases or surveys, analyses of the ESG dimensions are mostly based on ad hoc surveys and case studies. When cooperatives do share information on their sustainability performance, it is usually on a voluntary basis or in the context of certification requirements. Another contributing factor may be a perceived lack of sensitivity regarding these issues, as cooperatives often see themselves as inherently sustainable, particularly with respect to social and governance aspects. A recommendation is to improve the structuring of data and databases for the social and environmental dimensions of agricultural cooperatives.

ESG reporting in agricultural cooperatives is likely to increase in the future due to a number of initiatives: First, through the development of international public or private social responsibility and climate standards, such as the Global Reporting Initiative, GRI (2000), the Carbon Disclosure Project, CDP (2000) and the ISO 26000 standard (2010), with a specific ISO/TS 26030:2019 dedicated to the food chain. Second, through the implementation of public regulations, particularly in Europe with the implementation of the Corporate Sustainability Reporting Directive, which will require private companies that meet two of the following criteria – more than 250 employees, more than €40 million in revenue, more than €20 million in total assets – to publicly disclose information on ESG issues by 2028.[2]

Future studies could build on the aforementioned ESG criteria, as well as existing academic literature and practical documents, to develop a typology of relevant terms and sentences that effectively describe and characterize the sustainability performance of agricultural cooperatives. We expect the literature on cooperative sustainability to expand as concepts and institutional contexts evolve. First, research could provide a global perspective on the role of ESG in agricultural cooperatives, which is currently underrepresented in the literature. Second, it could explore critical issues that are rarely addressed but essential to agriculture, such as climate change, energy, environmental concerns and biodiversity. Third, future studies should consider the perspectives of both cooperatives and their members within the same analysis, rather than focusing on only one side. Finally, these studies would benefit from examining all four dimensions of sustainability outlined in this research simultaneously, rather than relying on only partial combinations. Such approaches are likely to provide valuable insights into how cooperatives can promote sustainability.

[2] A new European Directive (EU 2025/0044) published on 26 February 2025 amended Directives (EU 2022/2464 and EU 2024/1760) regarding the dates from which Member States must apply certain corporate sustainability reporting and due diligence requirements.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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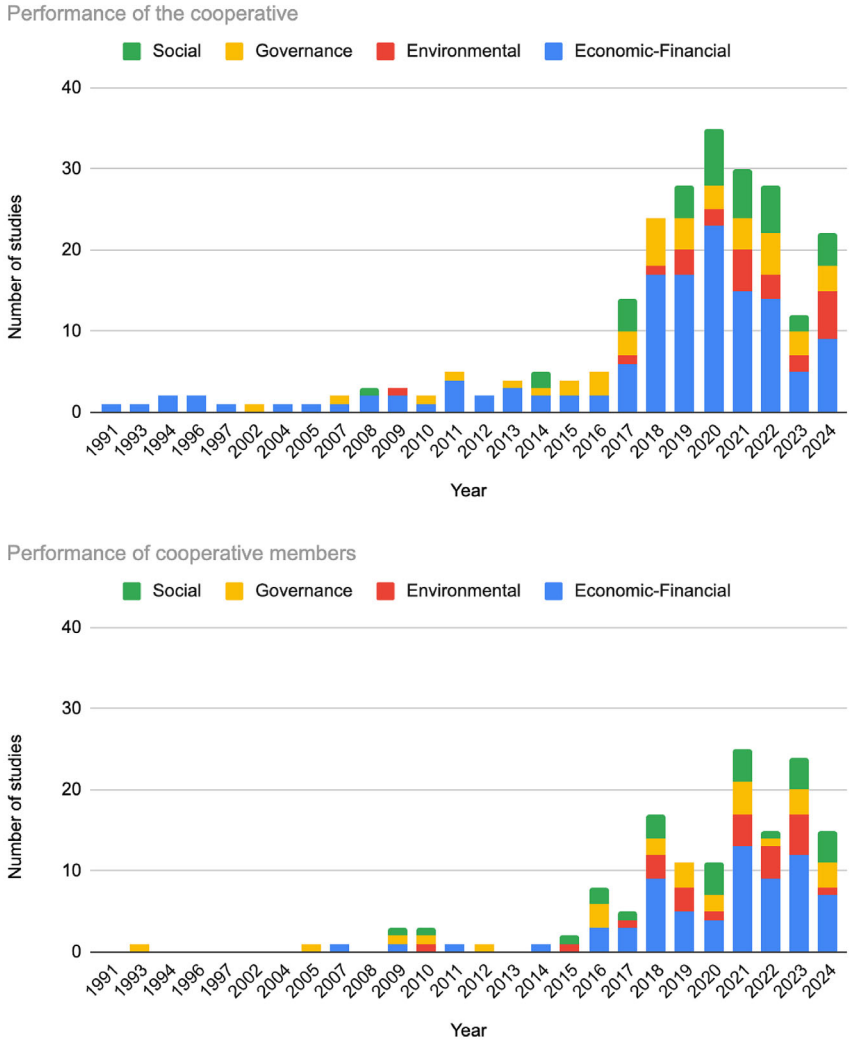
APPENDIX 2: DIMENSIONS OF SUSTAINABILITY PERFORMANCE CONSIDERED IN THE STUDY BY YEAR AND FOCUS ON THE COOPERATIVE OR ITS MEMBERS



Source: own work, based on the final selection of articles.

APPENDIX 3: MAIN TOPICS RELATED TO COOPERATIVES' OWN SUSTAINABILITY PERFORMANCE (167 articles)

This appendix lists a selection of articles with notable contributions to the literature on cooperatives' own sustainability performance and each dimension of sustainability performance (economic–financial, environmental, governance and social).

Economic–Financial Performance (133 articles)

Structure

Size: Arcas et al. (2011), Franken and Cook (2019), Gezahegn et al. (2019), Liang et al. (2021), Mozas-Moral et al. (2021), Pokharel et al. (2019)

Age: Fanasch and Frick (2018).

Legal form: Verhofstadt and Maertens (2014), Vozarova et al. (2019), Grashuis (2018d)

Organization/General Management
Integration in the supply chain: Ajates (2020), Sebhatu et al. (2021)
Diversification of activities: Azadi et al. (2010), Martins et al. (2019), Mauget and Declerck (1996), Trechter (1996)
Vertical integration: Hohler and Kuhl (2014), Sebhatu et al. (2021), Zhong et al. (2018)
Internationalization: Couderc and Marchini (2011), Mozas-Moral et al. (2021)
Restructuring/Merge: Barton et al. (1993), Benos et al. (2016), Cadot (2015), Grashuis (2023)
Management practices; Brandao and Breitenbach (2019), Ishak and Omar (2023)

Financial Management
Profit maximization: Couderc and Marchini (2011), Grashuis (2018)
Financing: Chibanda et al. (2009), Galati et al. (2019), Grashuis (2020), Marcos-Matas et al. (2018), Mateos-Ronco and Guzman-Asuncion (2018), Smart et al. (2019)
Investments: Azadi et al. (2010), Chibanda et al. (2009)
Innovation: Chagwiza et al. (2016), Marcos-Matas et al. (2018)
Risk/Longevity: Grashuis (2018a; 2018b), Pokharel et al. (2019), Singh et al. (2019), Valette et al. (2018), Zhong et al. (2022)

Comparison with IOFs
Brandano et al. (2019), Deng et al. (2021), Ferrer et al. (2019), Grashuis and Magnier (2018), Hind (1994), Pennerstorfer and Weiss (2013), Vozarova et al. (2019), Zamani et al. (2019)

Environmental Performance (24 articles)
Concern For The Environment
Organic: Idawati et al. (2024), **Mozas-Moral et al.** (2021)
Environmental conservation: Haque et al. (2009), Luzzani et al. (2021), di Paula da Silva Pinheiro et al. (2022)
Diversification: Tschopp et al. (2018)

Integration
Beuren et al. (2020), **Mozas-Moral et al.** (2020)

Comparison with IOFs
Callagher et al. (2022), De Freitas (2024), Deng et al. (2021)

Governance performance (42 articles)
Participation
Akwabi-Ameyaw (1997), Brandao and Breitenbach (2019), Chhinh et al. (2022), Chibanda et al. (2009), Florea et al. (2019), Shumeta et al. (2018), Verhees et al. (2015)

Internal organization
Board size: Franken and Cook (2019), Hakelius (2018), Iliopoulos et al. (2022), Kontogeorgos et al. (2018)
Board members and profiles: Hejkrlik et al. (2023), Huhtala et al. (2020), Ibourk and El (2023), Jankelova and Joniakova (2021), Melia-Marti et al. (2020), Umar et al. (2024)

Innovation
Bijman et al. (2013), Bijman et al. (2014), Grashuis (2019), Kalogeras et al. (2013), Marcos-Matas et al. (2018)

Social performance (36 articles)
Local roots
Di Marcantonio et al. (2022), Filippi (2014), Gezahegn et al. (2020a, 2020b), Jia and Xu (2021), Najafi et al. (2024a), Najafi et al. (2024b)

Profile of Cooperative Members
Number/Heterogeneity: Da Silva et al. (2022), Elliott et al. (2018)
Satisfaction: Grashuis and Cook (2021), Najafi et al. (2024b)
Control rights: Liang et al. (2022)
Opportunism: Sanchez-Navarro et al. (2019)

APPENDIX 4: MAIN TOPICS RELATED TO THE SUSTAINABILITY PERFORMANCE OF COOPERATIVES THROUGH THEIR RELATIONSHIP WITH MEMBERS (111 articles)

This appendix lists a selection of articles with notable contributions to the literature on the sustainability performance of cooperatives through their relationship with members and each dimension of sustainability performance (economic–financial, environmental, governance and social).

Economic–financial performance (69 articles)
Productivity
Yields: Ahado et al. (2021), Lin et al. (2022), Ma and Abdulai (2016, 2017), Ma et al. (2018), Xaba et al. (2020)
Access to inputs/technology: Manda et al. (2020), Ortega et al. (2019), Zanuzzi et al. (2021), Zhang et al. (2020)

Profitability
Farm income: Dhakal et al. (2021), Grashuis and Higuchi (2023), Ma and Abdulai (2017), Neves et al. (2021), Onah et al. 2024), Rueda et al. (2023), Twumasi et al. (2021), Wang et al. (2019, 2021)
Household income: Hu and Zhang. (2024), Liu et al. (2019), Ma and Abdulai (2016), Twumasi et al. (2021), Wu et al. (2023), Zheng et al. (2023)
Payments: Barry and Rousselière (2021), Liang and Wang (2020)

Environmental performance (24 articles)
Resources
Efficient use: Callagher et al. (2022), Donkor et al. (2023), Mojo et al. (2015), Olagunju et al. (2021)
While *Water*: Bro et al. (2019), Luzzani et al. (2021)
Soil: Luzzani et al. (2021), Ma et al. (2018), Tabe-Ojong (2022)

Pesticides/Fertilizers
IPM: Donkor et al. (2023), Liu et al. (2022a)
Organic: Groot-Kormelinck et al. (2022), Koch et al. (2023), Kuan et al. (2021), Qiao et al. (2018)

Competitivity

Profitability: Dong and Liang (2023), Wang et al. (2021)

Land abandonment: Ma and Zhu (2020), Ma et al. (2022), Pinheiro et al. (2021)

Governance performance (26 articles)

Participation:

Azadi et al. (2010), Balasubramanian et al. (2024), Breitenbach and Brandao (2021), Hariance et al. (2024), Hakelius and Hansson (2016)

Satisfaction/Loyalty:

Ferraz et al. (2018), Figueiredo and Franco (2018), Mannes et al. (2022), Miller and Mullally (2022), Mojo et al. (2015), Sergaki et al. (2020)

Trust:

Barraud-Didier et al. (2012), Galt et al. (2019), Grashuis and Cook (2019), Hernandez-Espallardo and Arcas-Lario (2008), Jia and James (2018), Meador and O'Brien (2019), Nilsson et al. (2020), Tadesse and Kassie (2017), Twumasi et al. (2021)

Social performance (26 articles)

Inclusion:

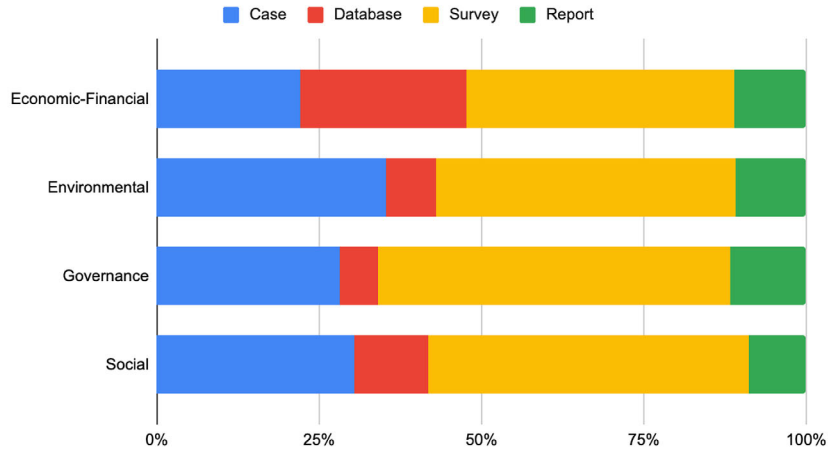
Farm size:	Liu et al. (2019), Ma and Abdulai (2016), Minah (2022), Mojo et al. (2017)
Farmer's age/education:	Minah (2022), Mojo et al. (2017), Twumasi et al. (2021), Wang et al. (2021)
Poverty gap:	Bernard and Spielman (2009), Geffersa (2024), Liu et al. (2023), Wassie et al. (2019)

Services:

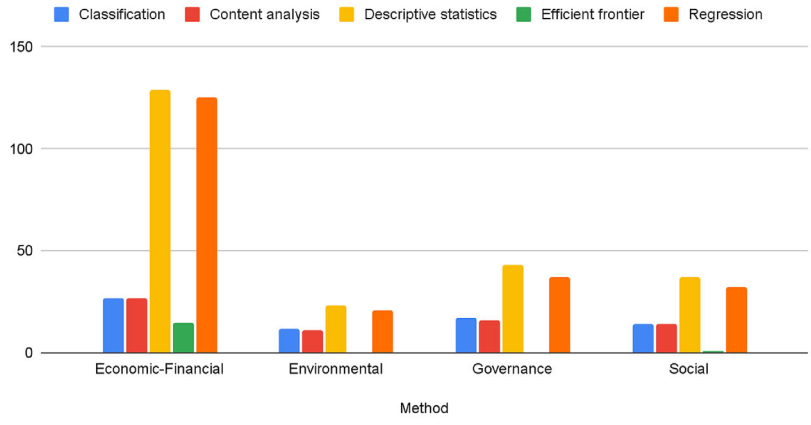
General:	Chhinh et al. (2022), Neupane et al. (2022), Ofori et al. (2019)
Inputs:	Dhakal et al. (2021), Yu and Nilsson (2018, 2019)
Finance:	Cadot and Ugaglia (2018), Ezeh and Abubakar (2019)
Controversies:	Sebhatu et al. (2021), Shumeta and D'Haese (2016), Tadesse et al. (2019), Yobe et al. (2020), Yu and Huang (2020)

APPENDIX 5: DATA SOURCES AND METHODOLOGIES USED IN THE ARTICLES

Data sources



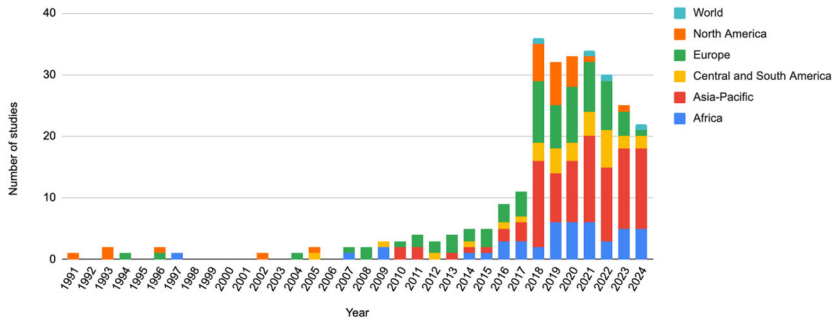
Methodologies



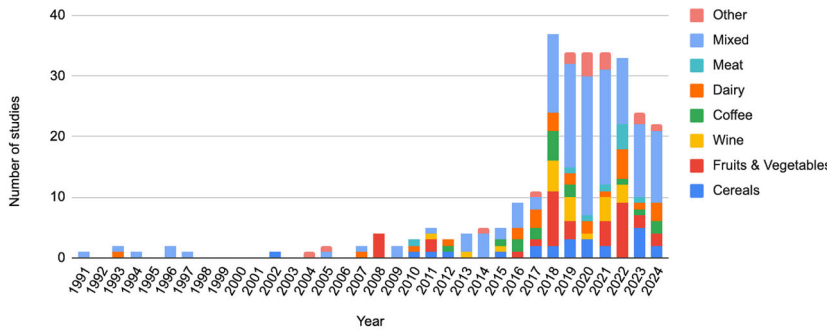
Source: Own work, based on the final selection of articles.

APPENDIX 6: DYNAMICS OF ARTICLES IN TERMS OF LOCATION AND AGRICULTURAL SPECIALIZATION

Location



Agricultural specializations



Source: Own work, based on the final selection of articles.

APPENDIX 7: ARTICLES CONNECTED TO THE SUSTAINABLE DEVELOPMENT GOALS FRAMEWORK WITH OR WITHOUT EXPLICIT MENTION

This appendix lists articles that refer to one of the Sustainable Development Goals in their empirical analysis, either explicitly (in bold) or implicitly (in normal font).

1. **No poverty (18 articles)**

Bautista (2018), Dhakal et al. (2021), Feisali and Niknami (2021), Gaillard and Dervillé (2022), Geffersa (2024), Gezahegn et al. (2020a), Hu et al. (2021), Liu et al. (2023), Manda et al. (2020), Miller and Mullally (2022), Moon and Lee (2020), **Motamed** (2010), **Mourya and Mehta** (2021), **Mozas-Moral et al.** (2021), Qiao et al. (2018), Sims (2021), Toiba et al. (2024), Zeng et al. (2023)

2. **Zero hunger (1 article)**

Mourya and Mehta (2021)

3. **Good health and well-being (12 articles)**

Health: Bro et al. (2019), Geng et al. (2023), Iliopoulos et al. (2022), Keenan et al. (2024), Luzzani et al. (2021), Vavrek et al. (2021), Wouterse and Francesconi (2016), Zhou et al. (2018)

Well-being: Figueiredo and Franco (2018), Galt et al. (2019), Mumararungu et al. (2024), Zeng et al. (2023)

4. **Quality education (22 articles)**

Ahado et al. (2021), Anand et al. (2023), Asmara et al. (2017), Bokoumbo et al. (2023), Chibanda et al. (2009), Clymer et al. (2021), Feisali and Niknami (2021), Grashuis and Cook (2021), Hakelius (2018), Kuan et al. (2021), Mojo et al. (2017), **Mozas-Moral et al. (**2020**), Mozas-Moral et al. (**2021**),** Neupane et al. (2022), Neves et al. (2021), Sadegh and Ghaediyan (2021), Shumeta and D'Haese (2016), Twumasi et al. (2021), Velandia et al. (2022), Wang et al. (2021b), Xiang and Sumelius (2010), Zheng et al. (2011)

5. **Gender equality (6 articles)**

Ahado et al. (2021), **Jayaraman** et al. (2024), Melia-Marti et al. (2020), Sims (2021), Verhees et al. (2015), Yobe et al. (2020)

6. **Clean water and sanitation (7 articles)**

Bro et al. (2019), Chhinh et al. (2022), Gezahegn et al. (2020a), Luzzani et al. (2021), Mumararungu et al. (2024), Sereiroth and Ryuichi (2021), Zhou et al. (2018)

7. **Affordable and clean energy (0 article)**

8. **Decent work and economic growth (3 articles)**

Mourya and Mehta (2021), Mozas-Moral et al. (2020**), Mozas-Moral et al. (**2021**)**

9. **Industry, innovation and infrastructure (23 articles)**

Innovation: Arcas et al. (2011), Beuren et al. (2020), Bijman et al. (2014), Callagher et al. (2022), Chagwiza et al. (2016), Dressler and Paunovic (2021), Ferrer et al. (2019), Fiore et al. (2020), Gallego-Bono and Chaves-Avila (2016), Grashuis (2018d), Haque et al. (2009), Jankelova and Joniakova (2021), Liu and Li (2020), Marcos-Matas et al. (2018), **Mourya and Mehta** (2021), **Mozas-Moral et al.** (2020), Mozas-Moral et al. (2021), Nazzaro et al. (2022), Pinheiro et al. (2021)

Infrastructure: Feisali and Niknami (2021), Resti et al. (2017), Singh et al. (2018), Wang et al. (2021b)

10. **Reduced inequalities (3 articles)**

Jayaraman et al. (2024**),** Minah (2022), **Mourya and Mehta** (**2021**)

11. **Sustainable cities and communities (17 articles)**

Bokoumbo et al. (2023), Chhinh et al. (2022), De Freitas (2024), Dhakal et al. (2021), Figueiredo and Franco (2018), Galt et al. (2019), Garcia-Lorenzo et al. (2021), Gezahegn et al. (2020b), Hariance et al. (2024), Mumararungu et al. (2024), Jia and Xu (2021), Liang et al. (2022), Luzzani et al. (2021), Moon and Lee (2020), Rostami and Salehi (2024), Tenzin and Natsuda (2016), Xaba et al. (2020)

12. **Responsible consumption and production (20 articles)**

Arcas et al. (2011), Brandao and Breitenbach (2019), Bro et al. (2019), Castilla-Polo et al. (2017), Deng et al. (2021), Donkor et al. (2023), Fantin et al. (2017), Idawati et al. (2024), Koch et al. (2023), Liu et al. (2022), Luzzani et al. (2021), Ma et al. (2018), Martins et al. (2019), **Mourya and Mehta** (2021), **Mozas-Moral et al.** (2020), Mozas-Moral et al. (2021), Sereiroth and Ryuichi (2021), Singh et al. (2018), Soule et al. (2023), Zhou et al. (2019)

13. **Climate action (2 articles)**

Mozas-Moral et al. (2020), Mozas-Moral et al. (2021)

14. **Life below water (0 article)**

15. **Life on land (2 articles)**

Mozas-Moral et al. (2020), Mozas-Moral et al. (2021)

16. **Peace, justice and strong institutions (12 articles)**

Anand et al. (2023), Bautista (2018), Chagwiza et al. (2016), Gallego-Bono and Chaves-Avila (2016), Hu and Zhang (2024), Meador and O'Brien (2019), **Mourya and Mehta** (**2021**), Pallavi et al. (2024), Sadegh and Ghaediyan (2021), Tschopp et al. (2018), Yobe et al. (2020), Yu and Nilsson (2019)

17. **Partnerships for the goals (8 articles)**

Beuren et al. (2020), Chibanda et al. (2009), Figueiredo and Franco (2018), Hernandez-Espallardo and Arcas-Laric (2008), Mauget and Declerck (1996), Mozas-Moral et al. (2021), Pallavi et al. (2024), Prasertsaeng et al. (2020)