

## RESEARCH ARTICLE



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# Critical factors to adopt sustainable agrifood supply chain management in developing countries: The case of Ethiopian coffee industry

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**Abstract**

Global agrifood supply chains are under increasing pressure to address sustainability issues due to growing concerns. However, numerous organizations within the agrifood industry are struggling to incorporate sustainable supply chain management practices and address the concerns. Therefore, this research is designed to identify the key critical factors, such as drivers, enablers, and barriers to adopting sustainable practices. This study considers the Ethiopian coffee industry, which is an important sector not only for the Ethiopian economy but also for the global agrifood supply chain. To accomplish the objectives of this study, we applied a systematic literature review and empirical survey. A systematic literature review was conducted to identify critical factors for adopting sustainability in agrifood supply chains. An empirical survey was then undertaken in the Ethiopian coffee industry to rank the key critical factors. Hence, the study has revealed that economic and productivity improvement, cost effectiveness and improvement in the overall performance, and difficulty in mindset and cultural changes as the key critical factors that determine the adoption of sustainability initiatives from the perspectives of the Ethiopian coffee supply chain. The findings can be used as input by government regulatory bodies and policymakers to craft strategies and policies to adopt sustainability initiatives and ensure sustainable development. Furthermore, the research is expected to contribute to the existing literature by bringing in the perspective of suppliers in developing countries.

**KEYWORDS**

agrifood supply chain, critical factors, developing countries, Ethiopian coffee industry, sustainability, sustainable development

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## 1 | INTRODUCTION

### 1.1 | Background of the study

Agrifood supply chain involves with the production and delivery of agricultural produce, such as coffee, from its origin to the place of consumption. Coffee is one of the most valuable tropical agricultural products and the most traded commodity in the world, next to oil (Bozzola et al., 2021; Gonzalez-Perez & Gutierrez-Viana, 2012). Arabica and Robusta are the two main types of coffee produced worldwide. Arabica accounts for approximately 60% of the global coffee production, and the remaining 40% accounts for Robusta coffee (FAO, 2015). Coffee is produced in the “Coffee Belt,” which includes approximately 60 producing countries (ICO, 2021). The major producers of coffee in Africa are Côte d'Ivoire, Ethiopia, Kenya, and Uganda, and for these countries, coffee is a significant source of foreign currency earnings and livelihoods for many households (Shikur, 2022). Coffee in Ethiopia accounts for 4%–5% of GDP, 10% of total agricultural production, 40% of total exports, 10% of total government revenue, and 25%–30% of total export earnings (Adem, 2019). Considering the importance of this commodity to the national economy, the Ethiopian Coffee and Tea Authority has prepared a strategic plan to increase coffee production over the past 15 years. The comprehensive strategy has planned to increase the production of coffee from 470 thousand metric ton in 2019 to 1.26 million metric tons in 2033 (ECTA, 2018).

The coffee industry faces several sustainability challenges such as water pollution, biodiversity loss, soil erosion, deforestation, climate change, labor exploitation, low prices, and aging farmers are main concerns (Meyfroidt et al., 2013; Panhuysen & Pierrot, 2014; Pham et al., 2019). With current production practices, it is projected that by 2050, warming in coffee-producing countries will increase, and 75% of suitable land for Arabica coffee and 63% of the land for Robusta coffee farming will be lost (Sachs et al., 2019). In addition, the coffee sector suffers from low and declining prices, which causes a decrease in the interest of farmers and future generations involved in the production of coffee and a shortage of labor (ICO, 2020; Panhuysen & Pierrot, 2018). Thus, Bozzola et al. (2021) confirmed that many coffee farmers do not earn sufficient income to improve their production and cover the cost of providing food, health, and education to their families.

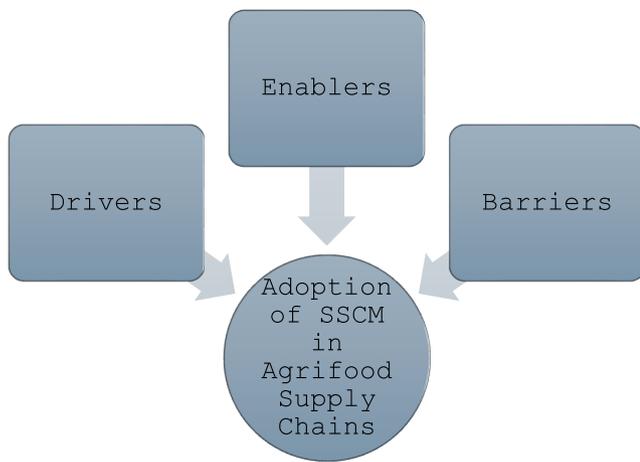
Currently, awareness of sustainability is increasing, and it is important to ensure that supply chain operations are socially and environmentally sustainable. Allaoui et al. (2018) confirmed that agrifood supply chains are under increasing pressure from consumer organizations, environmental advocacy groups, and policymakers to address the sustainability of their supply chains. As a result, markets in developed countries, such as Europe require producers of agricultural products, such as coffee to ensure that their supply chains are free from deforestation and forest degradation (EU, 2023). Hence, it is becoming evident that businesses must modify their traditional approaches to attain sustainability (Roy et al., 2020). Developing sustainable supply chains requires profound understanding of the transition from

traditional to sustainable supply chains (Kitsis, 2018; Pagell & Shevchenko, 2014). Nevertheless, only a few studies have been conducted on coffee-producing countries, including Brazil (Branco & dos Santos, 2019; Guimarães et al., 2022; Santos et al., 2023), Vietnam (Newton et al., 2013; Nguyen et al., 2023; Nguyen & Sarker, 2018), Indonesia (Jaya & Raharja, 2014; Suryaningrat & Novita, 2023) and Mexico (Contreras-Medina et al., 2020). Furthermore, research on sustainable supply chain management (SSCM) in coffee producing countries in Africa, such as Ethiopia remains limited. Moreover, the sustainability challenges are not similar for all countries, and coffee farmers have different situations; hence, there is no one size solution that fits to all (Bozzola et al., 2021). Therefore, it is fundamental to understand the sustainability challenges of each coffee-producing country and propose tailored solutions based on ecological, social, and economic contexts. In addition, owing to the slow pace of adoption of SSCM in emerging economies, the field of study is in its infancy stage (Khan et al., 2021). In addition, most empirical research on SSCM is carried out in developed countries from the buyer's perspective. Hence, to understand the changing aspects of SSCM, more empirical research is required in developing countries (Jia et al., 2018). Consequently, researchers such as Ben Brik et al. (2013), Esfahbodi et al. (2016) and Jia et al. (2018), have called for more research concerning SSCM in developing countries to increase generalizability and inclusivity at global scale. The quest to embrace sustainability in the coffee supply chain is persistent; however, there is no understanding of how SSCM can be integrated and which aspects should be prioritized (Guimarães et al., 2022). Although prior researches have addressed the research gaps related to the critical factors of sustainability in other supply chains, it is crucial to conduct an in-depth industry study that considers the existing context (Dai et al., 2021; Guimarães et al., 2022; Saeed & Kersten, 2019). Hence, studying the issues of SSCM in the coffee industry not only makes a substantial contribution to addressing the sustainability challenges of the sector but also to the ongoing theoretical discourse in the field (Nab & Maslin, 2020).

It is important to understand the critical factors and priorities of the coffee industry to successfully implement sustainability initiatives. As per Mastos and Gotzamani (2022), the term critical factors encompasses enablers, drivers, and barriers, and can be described as a set of factors that enable or inhibit the successful implementation of SSCM initiatives. Besides, it is crucial to differentiate the terms drivers and enablers, which are often used synonymously. Similar to Lee and Klassen (2008) and Danese et al. (2019), we define drivers as the factors that initiate and encourage business organizations to adopt SSCM. Whereas the term enabler is used to describe the factors that assist an organization in successfully implementing sustainable business initiatives. The conceptual model on the critical factors to adopt sustainability initiatives is depicted in Figure 1.

### 1.2 | Theoretical lenses

Both institutional theory and stakeholder theory are used as lens to analyze the critical factors that determine the implementation of



**FIGURE 1** Conceptual model on the critical factors. Source: Authors own work.

sustainability initiatives in agrifood supply chains, taking the Ethiopian coffee industry as a case study.

### 1.2.1 | Institutional theory

The primary intention of institutional theory is to recognize how institutions maintain their legitimacy by complying with the laws and customs of their environments (Govindan, 2018). According to institutional theory, social and environmental factors that are typically stronger than market forces can have a substantial impact on how formal structures develop throughout an organization (Ebrahimi & Koh, 2021). Conforming to the institutional environment is vital for the survival of institutions because obedience results in benefits, such as stability, legitimacy, and resource availability (Ball & Craig, 2010).

According to institutional theory, there are three forms of drivers that could result in isomorphism in the strategies, structures, and processes of organizations (Glover et al., 2014). These drivers are called coercive, normative, and mimetic (DiMaggio & Powell, 1983). Coercive drivers are created when powerful institutions, such as government agencies, influence organizations within the supply chain (Govindan, 2018), in this case, within the coffee supply chain. Normative drivers influence organizations to adapt to being recognized as organizations with legitimate activities (Sarkis et al., 2011). In addition, De Haen and Réquillart (2014) confirmed that consumers can play an important role in determining food items to fulfill sustainability criteria and contribute to enhancing SSCM practices. Mimetic drivers exist when enterprises imitate the actions of successful competitors in an industry and replicate their pathway to success and legitimacy (Govindan, 2018; Sarkis et al., 2011). Mimetic isomorphism is an organizational response to uncertainty. In the absence of a defined plan of action, organizations often imitate more successful competitors within the industry (Aerts et al., 2006).

### 1.2.2 | Stakeholders theory

A stakeholder is “any group or individual who can affect or is affected by the achievement of an organization's objectives” (Freeman, 1984). According to stakeholder theory, an organization is regarded as a collection of relationships between people or groups that affect or can be affected by the operations of the organization (Freeman, 2023). Hence, it is impossible for an organization to operate its business successfully without establishing a good relationship with stakeholders (Freudenreich et al., 2020). According to stakeholder theory, a joint purpose should result from the shared values of an organization and its stakeholders, which subsequently acts as a powerful and inspiring benchmark for collaborative value creation (Breuer & Lüdeke-Freund, 2017). From this perspective, stakeholders' involvement is vital for organizations to create value, and the withdrawal of their support can threaten the viability of businesses (Freeman, 2023; Haslam et al., 2015). Various categorization criteria have been used to group stakeholders; nevertheless, the main idea of stakeholder theory is that internal and external groups influence organizational practices (Govindan, 2018; Sarkis et al., 2011). Employees, top management, and stockholders are regarded as internal stakeholders, whereas customers, suppliers, distributors, banks, governments, and NGOs are categorized as external stakeholders (Delmas & Toffel, 2004; Freeman & McVea, 2005).

Instead of concentrating on maximizing financial success, an organization's primary duty is to ensure its existence and success by balancing the needs of numerous stakeholders (Freeman & McVea, 2005). Stakeholder theory can help SSCM practices by addressing environmental, social, and economic dimensions and considering the interests of a variety of stakeholders (Govindan, 2018; Narkhede et al., 2024). Hence, considering the legitimate interests of stakeholders, businesses must design their business operations to create value that can address the ecological and social interests of stakeholders (Casadesus-Masanell & Ricart, 2010; Kurucz et al., 2017; Ureña Espallat et al., 2022). Therefore, stakeholder theory can serve as a guide for leaders of organizations in a supply chain with a more general perspective to understand the relations of an organization with environmental and social systems (Govindan, 2018).

### 1.3 | Motivation and purpose of the study

The motive behind this research lies on the need to identify and prioritize the critical factors that determine the adoption of sustainability programs in the agrifood supply chain generally and the Ethiopian coffee industry specifically. A detailed understanding of the critical factors is essential to craft strategies and enact policies to integrate SSCM in the agrifood sector and ensure sustainable development in developing countries. To accomplish this purpose the study has outlined the following research questions (RQs):

**RQ1.** What are the critical factors to adopt SSCM?



**RQ2.** How can these critical factors be ranked and prioritized?

This research aims to explore the key critical factors that determine the adoption of sustainability initiatives in the agrifood supply chain from the Ethiopian coffee industry perspectives. The research is expected to present new insights and contribute to the existing knowledge and literature in the field of study. Hence, this paper has considered the following research objectives (ROs) to answer the above RQs.

**RO1.** To undertake a systematic literature review to identify critical factors to implement SSCM.

**RO2.** To rank the critical factors by conducting empirical survey in the Ethiopian coffee industry.

In addition to the introduction section, the subsequent parts of this paper are arranged as follows: Section 2 describes the literature search methodology and empirical survey undertaken. Section 3 depicts the extensive analysis of existing literature. Section 4 illustrates the main findings of the study. Section 5 displays the concluding part of the article, providing suggestions for prospective areas of future research considering the limitations of the study. Finally, section 6 presents a declaration of interest.

## 2 | METHODOLOGY

To accomplish the objectives, the study was undertaken with a combination of systematic literature review (SLR) and empirical survey. A SLR was conducted to identify critical factors that determine the adoption of sustainability initiatives in agrifood supply chains, which includes drivers, enablers, and barriers. An empirical survey was then carried out on the Ethiopian coffee industry to determine the relative importance of critical factors.

### 2.1 | Literature search methodology

A systematic literature review approach generates collective insights into the domains and subfields of investigation by combining theoretical and empirical research in a repeatable and transparent process that examines the present body of literature using a set of search criteria (Liberati et al., 2009; Tranfield et al., 2003). Moreover, Mengist et al. (2020) have described SLR a process that facilitates a systematic collection of appropriate research evidence on the given topic that fits the pre-specified eligibility criteria and to have an answer for the formulated research questions. Hence, SLR was conducted by securing articles from the Web of Science, Scopus, and Science Direct databases using keywords. The application process of SLR is displayed in Figure 2, and further details are discussed in the following sections.

Most of the articles were selected based on combinations of keywords, the Boolean syntaxes (AND/OR) were used to combine these keywords. The keywords used to identify and select relevant articles were categorized into four groups: sustainability, agrifood, supply chain, and critical factors. Each category includes a variety of related keywords. The asterisk sign was used at the end of some keywords to include multiple variations (e.g., *sustainabl\**: sustainable and sustainability).

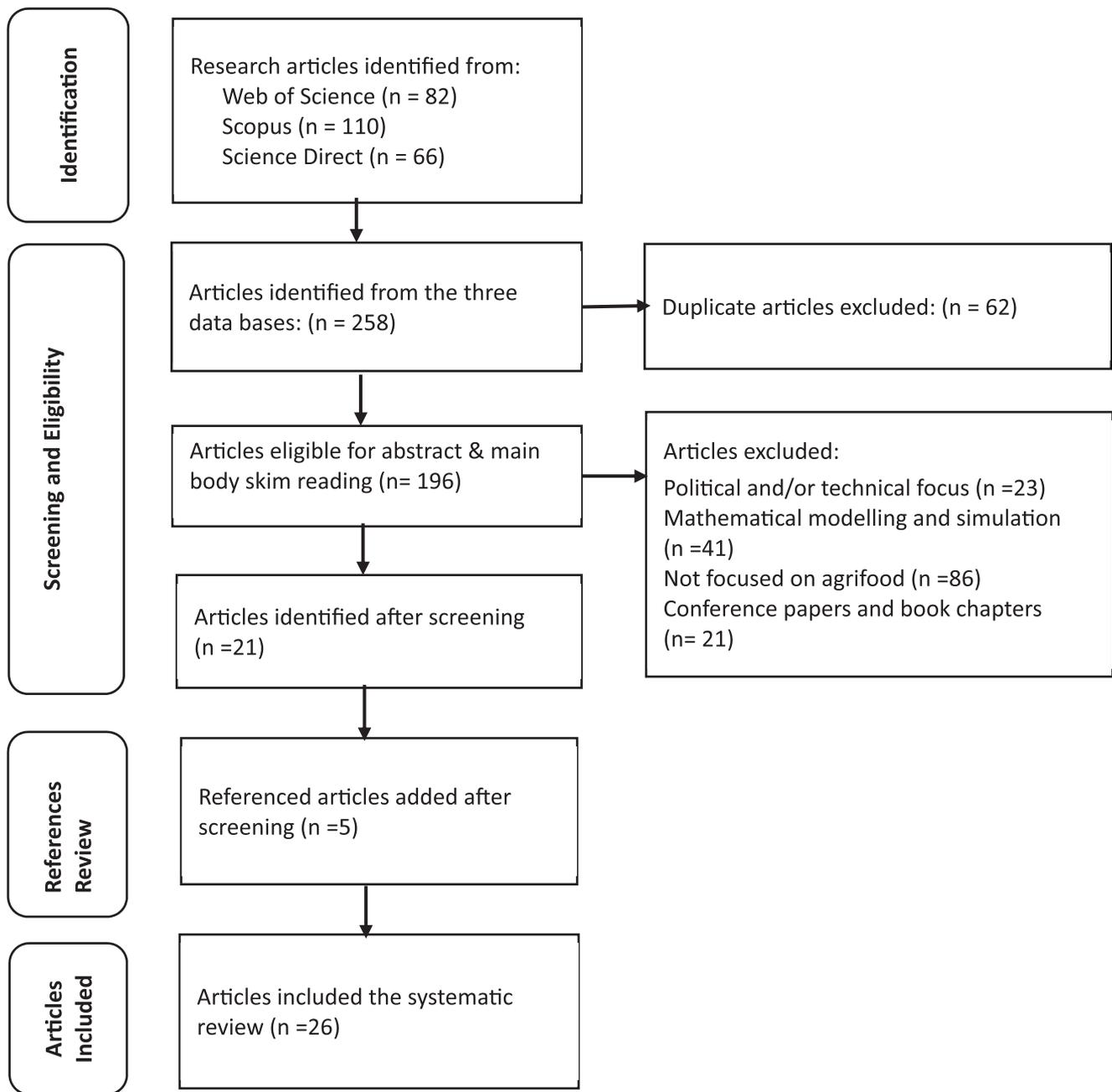
Hence, the following search strings were used to find the articles: (i) for sustainability: *sustainab\** OR *environment\** OR *green* (ii) for agrifood: *agricultur\** OR *agrifood* OR *coffee* (iii) for supply chain: *supply chain* OR *value chain* (iv) for critical factors: *drivers* OR *enablers* OR *barriers*. Moreover, the four search strings were combined using the 'AND' Boolean syntax on the search field "title", "keyword", and "abstract." Thus, a total of 258 research articles were initially retrieved from the Web of Science, Scopus, and Science Direct databases, which were reduced to 196 after removing 62 duplicates. Next, the titles and abstracts of the articles were reviewed to determine the relevance of the papers for detailed analysis. Only journal articles peer-reviewed, published in English, and dealing with sustainability initiatives in the agrifood sector are included. Whereas conference papers and book chapters, studies that focus on political and/or technical aspects, mathematical modeling and simulation, and do not deal with agrifood supply chains are excluded. Subsequently, after initial screening and the application of inclusion criteria and exclusion criteria led to a reduction in the number to 21. Then, the authors explored the references included in the eligible papers and performed a forward search and found five additional articles. Thus, a total of 26 articles were selected for the final review and analysis as shown in Table 1.

### 2.2 | Empirical survey methodology

#### 2.2.1 | Data collection technique

Empirical survey was conducted on selected coffee producers and exporters to verify the relative importance of the critical factors of sustainability in agrifood supply chains from the perspective of the Ethiopian coffee industry. A questionnaire was developed to collect data regarding the profile of the respondents, their organizations, and responses to questions based on the literature findings of the drivers, enablers and barriers of SSCM. Hence, all the critical factors are rated using the questions in a survey questionnaire and respondents had to indicate the degree to which they agree or disagree with each of the statements on a five-point scale from 1 = fully disagree to 5 = fully agree.

The empirical data were collected from the members of the Ethiopian Coffee Association. The association has 511 registered members involved in the production and export of coffee, 225 of whom were selected for the survey based on their experience in the industry. A total of 115 managers from coffee producers and exporters completed and returned questionnaires.



**FIGURE 2** The literature search procedure. *Source:* Authors own work.

### 2.2.2 | Analysis technique

The second objective of the study is to determine the relative importance of critical factors from the perspective of coffee producers and exporters in the Ethiopian coffee industry. Therefore, a questionnaire was developed by including the drivers, enablers, and barriers identified through the SLR to conduct an empirical survey. The feedback obtained from coffee producers and exporters using the survey questionnaire was analyzed using simple descriptive statistics and frequency analysis. The results of the survey questionnaire analysis are presented in tables and graphs.

## 3 | SYSTEMATIC LITERATURE REVIEW

### 3.1 | Drivers of SSCM

In this study, we define drivers in line with Lee and Klassen (2008) as the forces or motivating factors influencing a commercial organization's adoption of SSCM. According to Chkanikova and Mont (2015) drivers can be categorized into four classes: regulatory, resource, market, and social. The regulatory factor encompasses drivers such as pressure from government; the resource factor drivers are related to the reduction of operational costs and enhanced profit, improving

**TABLE 1** Summary of articles reviewed.

S. N	Author/s and year	Title of article	Type of study	Country of research
1	Borsellino et al. (2020)	Agrifood Markets toward Sustainable Patterns	Literature Review	International
2	Singh et al. (2023)	Analysis of barriers for sustainable agro-food supply chain: an interpretive structural modeling and MICMAC approach	Empirical	India
3	Farooque et al. (2019)	Barriers to circular food supply chains in China	Empirical	China
4	Liu et al. (2021)	Barriers to sustainable food consumption and production in China: A fuzzy DEMATEL analysis from a circular economy perspective	Empirical	China
5	Gkountani et al. (2021)	Circular economy and resilience: convergences and deviations in the case of agrifood supply chains	Literature Review	International
6	Chkanikova and Mont (2015)	Corporate Supply Chain Responsibility: Drivers and Barriers for Sustainable Food Retailing	Literature Review and Empirical	Sweden, British and Denmark
7	Naseer et al. (2019)	Critical issues at the upstream level in SSCM of agrifood industries: evidence from Pakistan's citrus industry	Empirical	Pakistan
8	Golini et al. (2017)	Developing sustainability in the Italian meat supply chain: an empirical investigation	Empirical	Italy
9	Guimarães et al. (2022)	Drivers and barriers in sustainable supply chains: The case of the Brazilian coffee industry	Literature Review and Empirical	Brazil
10	Ouro-Salim and Guarnieri (2023)	Drivers and barriers in the institutionalization of circular economy practices in food supply chains: A review	Literature Review	International
11	Mehmood et al. (2021)	Drivers and barriers toward circular economy in agrifood supply chain: A review	Literature Review	International
12	Zimon et al. (2020)	Drivers of Sustainable Supply Chain Management: Practices to alignment with UN sustainable development goals	Literature Review	International
13	Mangla et al. (2018)	Enablers to implement sustainable initiatives in agrifood supply chains	Literature Review and Empirical	India
14	Hidayati et al. (2023)	Enabling sustainable agrifood value chain transformation in developing countries	Empirical	Indonesia
15	Mohseni et al. (2022)	Evaluating barriers and drivers to sustainable food supply chains	Empirical	Iran
16	Ghadge et al. (2017)	Implementing environmental practices within the Greek dairy supply chain Drivers and barriers for SMEs	Empirical	Greek
17	Nguyen et al. (2023)	Supply chain coordination in sustainable agribusiness development: an investigation from coffee exporters	Empirical	Vietnam
18	Ghadge et al. (2021)	Sustainability implementation challenges in food supply chains: a case of UK artisan cheese producers	Empirical	UK
19	Adams et al. (2023)	Sustainability in large food and beverage companies and their supply chains: An investigation into key drivers and barriers affecting sustainability strategies	Empirical	Australia
20	Hidayati et al. (2021)	Sustainable Agrifood Value Chain-Transformation in Developing Countries	Literature Review	International
21	Govindan (2018)	Sustainable consumption and production in the food supply chain: A conceptual framework	Literature Review	International
22	Emamisaheh and Rahmani (2017)	Sustainable supply chain in food industries: drivers and strategic sustainability orientation	Empirical	Iran
23	Mastos and Gotzamani (2022)	SSCM in the food industry: a conceptual model from a literature review and a case study	Literature Review and Empirical	Greek
24	Elhidaoui and Kota (2023)	Toward a green Agrifood supply chain through ANP and ELECTRE I	Literature Review and Empirical	International
25	Sahu et al. (2023)	Lean-agile-resilience-green practices adoption challenges in sustainable agrifood supply chains	Empirical	India
26	Kashyap and Shukla (2024)	Sustainable food supply chain: exploration, identification, and analysis of the critical drivers for the foxnut (Makhana) industry	Empirical	India

Note: Authors' own work.

brand image and reputation; and the market factor comprises drivers, such as demand for sustainable and healthier food, opportunity to increase sales, gain competitive advantage by entering sustainable markets, and meet industry norms. In addition, social factors include drivers such as pressure by consumers, active NGOs movement exerted by the media, and avoidance of accountability. According to Golini et al. (2017), the drivers of sustainable initiatives in agrifood supply chains can be classified into three categories. The first category is internal drivers, which include factors such as reduction in operating costs, enhancement of the value of the company, and employee welfare. The second class comprises external drivers that comply with current and future regulations, address customer and retailer pressure, enhance brand image and corporate reputation, stakeholder pressure, and establish better relations with the local community. The third category, known as contingent drivers, consists of factors, such as company size and being part of a multinational group. Ouro-Salim and Guarnieri (2023) also identified the drivers of sustainability in food supply chains and classified them into three categories: coercive, normative, and mimetic. Coercive pressure refers to stringent government regulations to initiate sustainability schemes. Normative pressure can trigger sustainability initiatives with consumer awareness and attitudes playing a crucial role. Mimetic drivers encourage companies to imitate the best sustainable practices of successful organizations. Mehmood et al. (2021) also analyzed the drivers of sustainability in agrifood supply chains and classified them into six groups. The first is the policy and economy group, which includes drivers such as laws to promote leaner production, natural resource conservation, health, and safety. The second is financial drivers, which encompass financial and economic benefits as causes of sustainability initiatives. Environmental protection is the third group, which includes ecological conservation, the quality of agriculture, and the protection of renewable resources. Fourth, the health benefits group included paybacks related to animal and human health. The fifth social benefits category includes social benefits such as quality of life and job creation. Finally, the product development and innovative solutions group refers to innovative ideas for recycled products that increase their value. Additionally Zimon et al. (2020) identified the drivers of implementing sustainable supply chain initiatives in the agrifood sector. The drivers are classified into three categories: internal drivers related to the company, suppliers, and customers; and SSCM third parties.

Nguyen et al. (2023) stated that drivers, such as management, top management sensitivity and commitment, regulatory pressure, market pressure, and competitive pressure are the main drivers of sustainable supply chains. Adams et al. (2023) classified drivers into two categories: internal and external. Employee attraction and retention to reduce costs and increase payback and the application of advanced technologies are identified as internal drivers. External drivers include pressure from customers and consumers, government and legal frameworks, pressure from non-governmental organizations, competitive advantage, supply chain collaboration, and fostering company reputation. Govindan (2018) discusses the drivers of sustainability initiatives from the perspective of stakeholders in the agrifood supply chain. The stakeholders regarded in determining the drivers are the

**TABLE 2** Drivers of SSCM initiatives.

Type of driver	Reference
Regulations (environmental, regional, international)	(Adams et al., 2023; Chkanikova & Mont, 2015; Dania et al., 2018; Emamisaheh & Rahmani, 2017; Golini et al., 2017; Govindan, 2018; Jia et al., 2018; Kashyap & Shukla, 2024; Luthra et al., 2020; Mehmood et al., 2021; Mohseni et al., 2022; Nguyen et al., 2023; Ouro-Salim & Guarnieri, 2023; Saeed & Kersten, 2019; Shibin et al., 2016; Zimon et al., 2020)
Social well-being and social responsibility	
Economic and productivity improvement	
Reputation and brand image enhancement	
Adoption of innovative business model	
Competitive advantage	
Inclusion of sustainable processes	
Supportive organizational culture	
Access to technology and infrastructure	
Government policies and legislation	
Supply chain collaboration	

Note: Authors' own work.

government, business, consumers, nongovernment organizations, development cooperation agencies, media, and research centers. In addition, Emamisaheh and Rahmani (2017) elucidated these drivers and classified them into two broad categories, internal and external, from the perspective of the food industry in Iran. Internal drivers are identified within the internal environment of the organization, and include managerial attitudes, top management support, and employee motivation. External drivers emanate from entities that exist in the external environment of the organization, such as competitors, suppliers, distributors, consumers, and the government, and classify them as mimetic pressure, normative pressure, and coercive pressure. Besides, Kashyap and Shukla (2024) have also categorized the drivers under social, economic and environmental factors. Table 2 presents the main drivers that prompt organizations to initiate a sustainable supply chain.

### 3.2 | Enablers of SSCM

We use the term enablers to describe the factors that assist organizations or supply chains in successfully implementing sustainable business initiatives. According to Hidayati et al. (2023), enablers to implement SSCM initiatives in the agrifood supply chain can be categorized into seven groups. The first is related to the attitudes or behaviors of individual actors and can motivate the implementation of sustainable practices. The second group comprises information and communication enablers, and the regular exchange of information and communication encourages actors within the supply chain to



improve sustainable practices and capture more value. The third group of enablers is institutionally related; the institution can help actors in a supply chain to collectively take actions, such as proceeding with contractual arrangements. The fourth class of enablers is related to the role of the government, and the regulation and intervention of the government provide the essential ability to successfully practice sustainability. The fifth category includes facilitation in various forms, including training and incentives, which help actors accelerate the implementation of sustainable practices. The sixth class comprises market-related enablers, and access to sustainable markets encourages the implementation of sustainability practices in agrifood supply chains and provides a better opportunity. The final group of enablers is related to certifications for determining the standard practices and compliance. Furthermore, Mangla et al. (2018) identified and analyzed enablers to successfully implement sustainability in agrifood supply chains in an Indian context. They have identified enablers such as incentives and support of various agencies, understanding customer and stakeholder requirements, understanding the importance and benefits of sustainability initiatives, management involvement, support and commitment, resource allocation and information sharing within and across the hierarchy, joint planning and capacity building for delivering sustainable products, monitoring and auditing ongoing supply chain activities, and cost-effectiveness and improvements in overall performance. Mastos and Gotzamani (2022) illustrated enablers and classified them into firm, supply chain, and external levels. Firm-level enablers refer to the internal factors that firms should consider for the successful implementation of sustainability initiatives. Top management commitment, customer demand, knowledge and expertise, training, and efficiency are among the most common firm-level enablers. Some of the most common supply chain-level enablers include information sharing, trust, supply chain strategy, and the geographical distance between supply chain partners. External enablers include government policies, international or national regulations, stakeholders, competitors, and investors. Elhidaoui and Kota (2023) identified enablers as pathways and classified them into three groups: social, operational, and organizational. Social enablers include the employment of competent human resources, continuous training, and incentive mechanisms to raise awareness of the benefits of sustainability initiatives. Operational enablers include the adoption of green waste management strategies, energy consumption reduction, pollution prevention, and application of cleaner technologies and techniques. On the other hand, improving the relationship among all stakeholders, such as customers, suppliers, and distributors; ensuring compliance with environmental regulations through internal audits; and certification with sustainability standards are regarded as organizational enablers. The main enablers for the successful implementation of sustainability initiatives are presented in Table 3.

### 3.3 | Barriers of SSCM

Organizations in agrifood supply chains typically encounter numerous obstacles and challenges (Gupta et al., 2020). Barriers, also called

**TABLE 3** Enablers to adopt SSCM initiatives.

Enablers	References
Incentives and support of various agencies	(Akhtar et al., 2016; Elhidaoui & Kota, 2023; Hidayati et al., 2023;
Understanding customer and stakeholder requirements	Luthra et al., 2020; Mangla et al., 2018; Mani & Gunasekaran, 2018; Mastos & Gotzamani, 2022)
Understanding the importance and benefits of the sustainability initiative	
Management involvement, support, and commitment	
Resources allocation and information sharing within and across the hierarchy	
Joint efforts, planning and capacity building	
Monitoring and auditing the ongoing supply chain activities	
Cost effectiveness and improvements in overall performance	

Note: Authors' own work.

challenges, are setbacks or obstacles to the implementation of sustainable agrifood supply chain management initiatives. According to Chkanikova and Mont (2015), barriers can be classified into regulatory, resource, market, and social factors. The regulatory factor barriers include lack of government leadership and support, and resource factors include setbacks, such as high initial investment costs, lack of financial resources, and lack of a sufficient degree of expertise. The barriers related to market factors include globalization, the complexity of the agrifood supply chain, and high production and operating costs. Social factors cover barriers, such as insufficient consumer interest for sustainable products and rejection of the impact of unsustainable production by society. Naseer et al. (2019) divided barriers into two categories, production and marketing. Production barriers include factors related to production inputs, while marketing constraints are related to the marketing of outputs. In addition, Ouro-Salim and Guarnieri (2023) proposed four categories of barriers to implementing sustainability initiatives in agrifood supply chains, the first category is related to financial constraints, such as a lack of sufficient financing to cover the high initial. The second is concerned with infrastructure limitations, such as lack of appropriate design and optimization and lack of reverse logistics for recycling. The third group is related to technological innovations, such as a lack of appropriate innovation and technology. Fourth, there is resistance from consumers and actors, such as a lack of corporate and consumer awareness. In addition, Mehmood et al. (2021) identified barriers to sustainability initiatives in agrifood supply chains and grouped them into six categories. These barriers are financial and economic, public policy and institutional, logistical and infrastructural, operational, knowledge and skill, and technological. Agyemang et al. (2018) identified and classified barriers into operational barriers related to the focal enterprise, operational barriers

related to supply chain internal actors, and strategic barriers related to external actors in the supply chain. The operational barriers related to focal enterprises include a lack of top-level management commitment, high financial costs, difficulties in assessing environmental sustainability performance, and lack of integrated management information and traceability systems. Poor multi-tier suppliers' commitment, unwillingness to exchange information among supply chain members, lack of sustainability-oriented suppliers, low consumer demand for sustainable products, low customer awareness of sustainable products, and uncertainty of economic benefits are classified as operational barriers to supply chain internal actors. The strategic barriers related to external actors in the supply chain include inefficiency or a lack of national and regional policies and regulations, as well as inadequate support and guidance from NGOs and development agencies.

Ghadge et al. (2021) categorized the challenges in implementing sustainability initiatives in agrifood supply chains into two categories, internal and external barriers. Internal barriers include misinterpretation of sustainability by top management, lack of top management inertia to derive sustainability initiatives, focus on short-term strategic goals, high initial investment costs, shortage of firms' capabilities and resources, smaller firm size, unorganized return management, and management and operational complexity. The external category includes barriers, such as the unwillingness of parties within the supply chain to exchange information, shortage of supplier capabilities and resources, lack of appropriate environmental regulations and legislation, insufficient support and guidance from regulatory authorities, fragmented and traditional market structure, lack of sustainability awareness among customers, poor logistics infrastructure, and insufficient demand for sustainable products.

Similarly, Adams et al. (2023) pointed out barriers to sustainability initiatives and classified them into two broad categories: internal and external. Resistant to cultural change, high implementation costs, and the absence of suitable technological solutions are internal barriers. Lack of sustainability policy and legal framework and lack of resources to effectively monitor their distant suppliers are considered external barriers. Furthermore, Govindan (2018) identified barriers from the perspectives of stakeholders in implementing sustainability, such as government, business, consumers, nongovernment organizations, development cooperation agencies, media, and research centers. In addition, Mastos and Gotzamani (2022) illustrated the barriers and classified them as firm, supply chain, or external. The absence of factors, such as top management commitment, customer demand, knowledge and expertise, training, and efficiency, are firm-level barriers. Lack of information sharing, trust, supply chain strategy, and geographical distance between supply chain partners are regarded as supply chain-level barriers. Lack of government policy, international or national regulations, and absence of pressure from stakeholders, competitors, and investors are identified as external barriers. Elhidaoui and Kota (2023) pointed out that the barriers to sustainable practices are high costs, lack of knowledge, insufficient support from stakeholders, and lack of regulation. High cost of acquiring advanced technology, building reverse logistics, and implementing sustainability

**TABLE 4** Barriers to adopt SSCM initiatives.

Barriers	Reference
Communication gaps and inadequate collaboration between parties	(Adams et al., 2023; Agyemang et al., 2018; Chkanikova & Mont, 2015; Elhidaoui & Kota, 2023; Ghadge et al., 2021; Govindan, 2018; Gupta et al., 2020; Mastos & Gotzamani, 2022; Mehmood et al., 2021; Mohseni et al., 2022; Naseer et al., 2019; Nazam et al., 2020; Olatunji et al., 2019; Ouro-Salim & Guarnieri, 2023; Sahu et al., 2023; Singh et al., 2023)
Unclear sustainability principles and measures	
Poor awareness and understanding	
High financial costs and lack of resources	
Lack of skilled and professionals or workforce	
Lack of top and middle management support	
High complexity of operational processes	
Difficulty in mindset and cultural changes	
Complex legal and regulatory requirements	
Sustainability risks or uncertainty	
Lack of government support	
Lack of proper technology and infrastructure	

Note: Authors' own work.

standards. Lack of knowledge of sustainability practices and benefits is another barrier. Moreover, stakeholders' failure to play their role, such as a lack of cooperation from suppliers and poor customer awareness, are challenges in implementing sustainability initiatives. The lack of regulations in sustainable supply chain perspectives and failure to comply with existing regulations are other setbacks. Besides, Sahu et al. (2023) have explored the challenges that obstruct the implementation of sustainability initiatives in agrifood supply chains. Hence, lack of understanding about the requirements of customers and other stakeholders, lack of transparency and trust, lack of auditing and monitoring of the ongoing supply chain activities, and lack of competitive advantages are identified as crucial barriers. Based on a literature analysis, the identified barriers are stated in Table 4.

## 4 | FINDINGS OF THE STUDY

We have identified the main critical factors that determine the implementation of SSCM initiatives through the SLR. From these critical factors, 11 are drivers, eight are enablers, and the remaining 12 are barriers. To rank and determine the relative importance of the critical factors an empirical survey was conducted in the Ethiopian coffee industry. A total of 115 respondents from 115 coffee-producing and exporting companies with managerial positions participated in the survey. Among the surveyed enterprises, 92 (80%) are organized with a

**TABLE 5** Characteristics of participant organizations and individuals.

Form of ownership	Count	Percentage
Cooperative Co	1	0.87%
Partnership	1	0.87%
Partnership Co	8	6.96%
Private Ltd. Co	92	80.0%
Share Co	7	6.09%
Sole Proprietorship	6	5.21%
Job Position	Count	Percentage
General Manager	21	18.26%
Logistics Manager	36	31.30%
Operation Manager	32	27.83%
Plant Manager	6	5.22%
Supply Chain Manager	20	17.39%
Experience in the Current Position	Count	Percentage
1–4 Years	66	57.39%
5–8 Years	39	33.92%
9–12 Years	10	8.69%
Educational Background	Count	Percentage
Diploma	2	1.74%
First Degree	71	61.74%
Second Degree	42	36.52%

Note: Authors' own work.

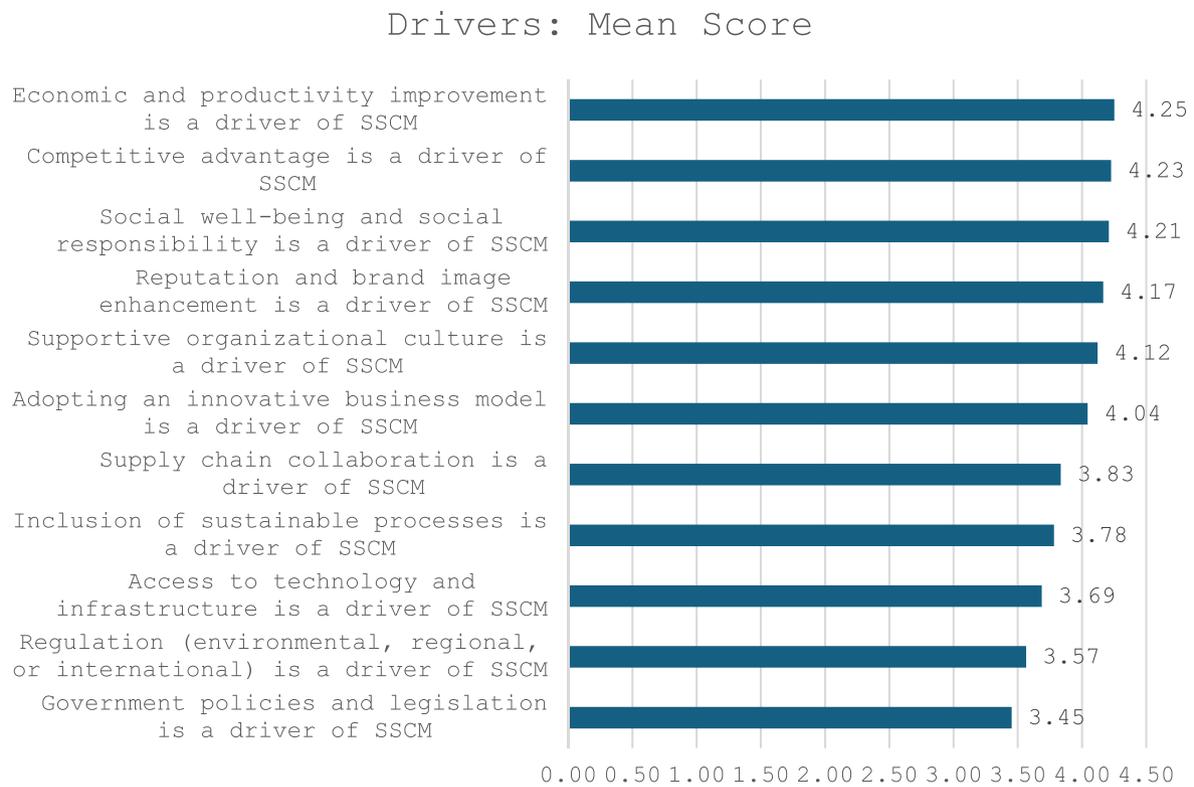
private limited company form of business ownership, whereas the remaining 23 (20%) have partnerships, share companies, sole proprietorships, partnerships, or cooperative forms of ownership. Among the respondents, 36 (31.30%) were logistics managers, 32 (27.83%) were operation managers, 21 (18.26%) were general managers, 20 (17.39%) were supply chain managers, and only six (5.22%) were plant managers. In addition, 66 (57.39%) respondents had one–four years of experience, 39 (33.92%) had 5–9 years, and 10 (8.69%) had 9–12 years of experience in their job positions. Regarding the educational background of the respondents, 71 (61.74%) had a first degree, 42 (36.52%) had a second degree, and only 2 (1.74%) had qualifications below the first degree. From the profile of the respondents, one can understand that the participants had adequate educational background and work experience to provide sufficient information for the survey. The characteristics of the surveyed companies and the respondents that represent the companies are summarized in Table 5.

Based on a literature review, we identified 31 critical factors, including drivers, enablers, and barriers. Of these, 11 are drivers that trigger SSCM initiatives in the agrifood supply chain, eight are enablers that facilitate successful implementation, and 12 are barriers that hinder the realization of sustainability initiatives. To understand the relevance and application of these critical factors in Ethiopian coffee supply chains, we conducted an empirical survey using a questionnaire.

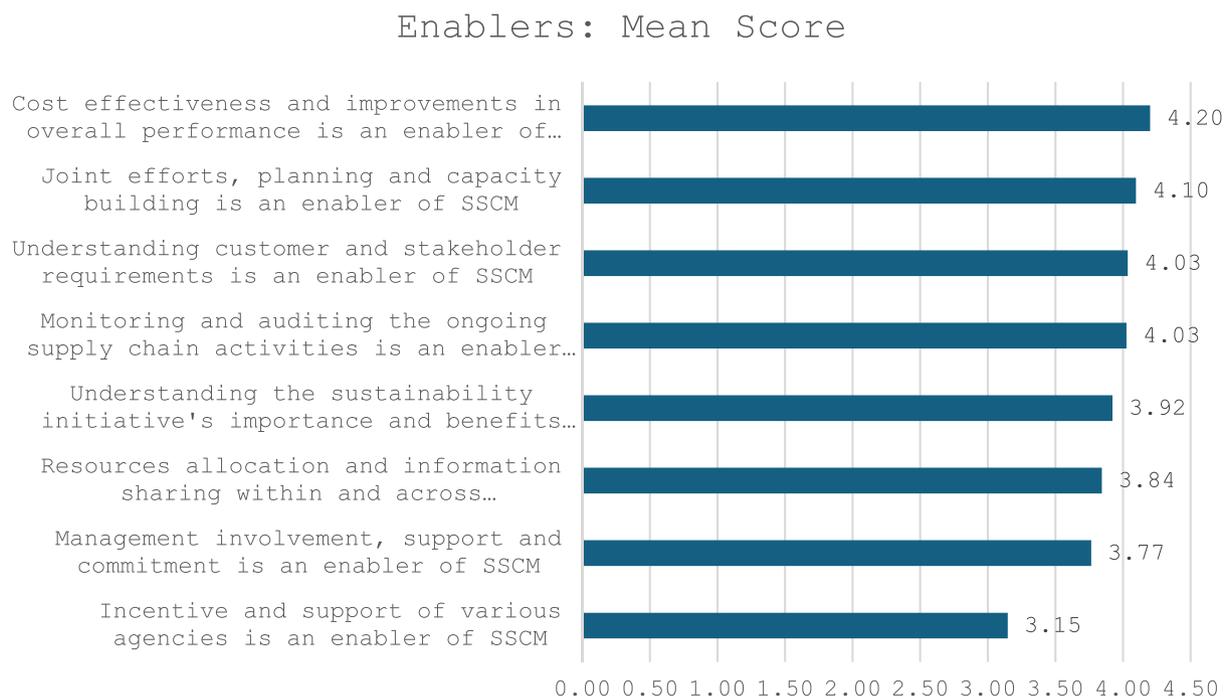
Based on the feedback obtained from the survey, among the list of drivers, economic and productivity improvement with a mean score of 4.25, competitive advantage with a score of 4.23, social well-being and social responsibility with a score of 4.21, reputation and brand image enhancement with a mean score of 4.17, supportive organizational culture with a score of 4.12, and adopting an innovative business model with a score of 4.04 are the top six and most relevant drivers from the perspective of the Ethiopian coffee supply chain. This result is consistent with the findings of Guimarães et al. (2022) who conducted a similar study on the Brazilian coffee industry. Zimon et al. (2020) and Luthra et al. (2020) obtained similar findings in their studies. However, the inclusion of the reputation and brand image enhancement driver among the top-ranking drivers makes this research different from previous studies. Moreover, Guimarães et al. (2022) identified environmental, regional, and international regulations as among the top five drivers; however, in this study, they are found to be the least relevant drivers. The ranking of all drivers to initiate SSCM in the Ethiopian Coffee Industry is presented in Figure 3.

Regarding the enablers to successfully implement sustainability initiatives, the top-ranking enablers, as per the survey, are cost effectiveness and improvements in overall performance with a mean score of 4.20; joint efforts, planning and capacity building with a score of 4.10; understanding customer and stakeholder requirements with a score of 4.03; monitoring and auditing the ongoing supply chain activities with a mean score of 4.03; understanding the sustainability initiative's importance and benefits with a score of 3.92; resources allocation and information sharing within and across organizations with a mean score of 3.84. This result is similar to the findings of Mangla et al. (2018), who conducted a survey of the Indian agrifood supply chain. The enabler cost effectiveness and improvement in the overall performance is ranked last in the study conducted by Mangla et al. (2018) whereas it is ranked first in this study. The detail classification of the enablers to adopt SSCM in the Ethiopian Coffee Industry is shown in Figure 4.

The next task is to rank the barriers to implementing SSCM in the agrifood supply chain, from the perspective of the Ethiopian coffee industry. The rating of all barriers in adopting sustainability initiatives is depicted in Figure 5. According to the survey result, difficulty in mindset and cultural changes with a mean score of 4.06, lack of proper technology and infrastructure with a score of 3.97, lack of top and middle management support with a mean score of 3.95, lack of government support with score of 3.93, high financial costs and lack of resources with a score of 3.90, and communication gaps and inadequate collaboration between parties with mean score of 3.89 are the most relevant barriers. This finding is consistent with that of a study conducted by Guimarães et al. (2022) on the Brazilian coffee supply chain. However, their findings seem slightly different because they identified financial costs and lack of resources and high complexity as top-ranking barriers.



**FIGURE 3** Ranking of drivers to adopt SSCM. Source: Authors own work.



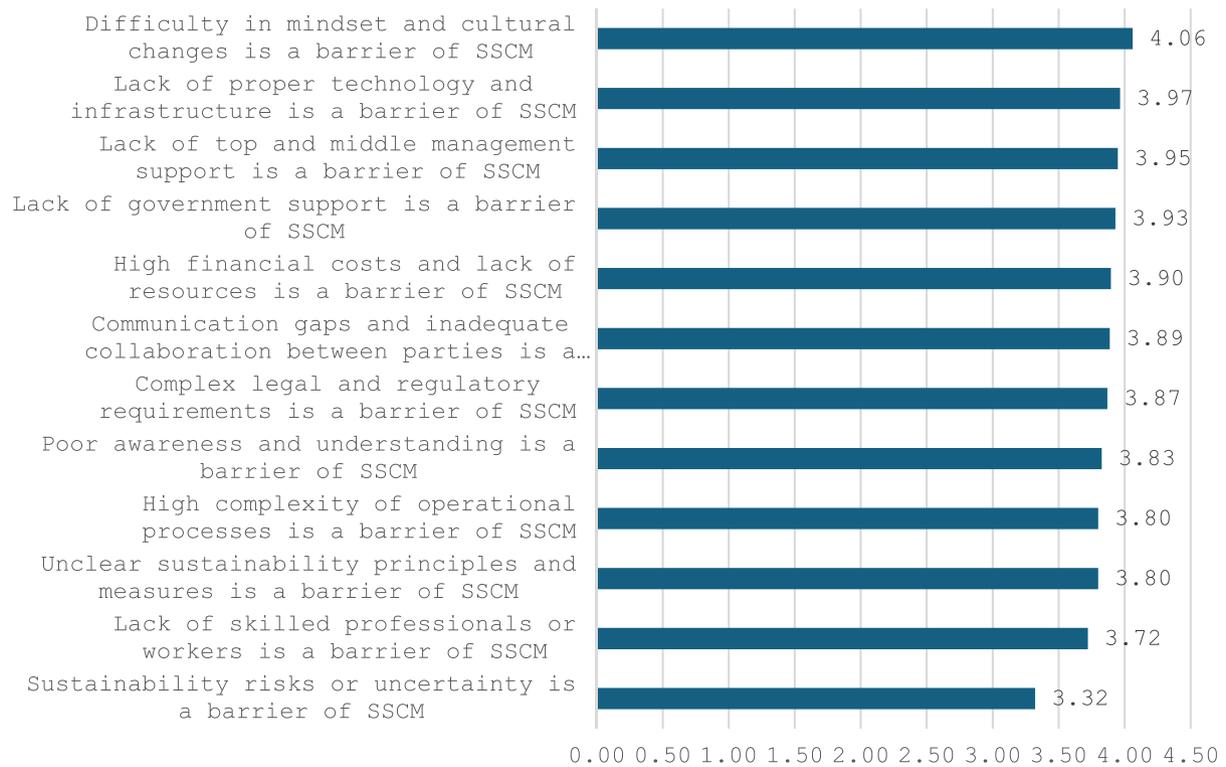
**FIGURE 4** Ranking of enablers to adopt SSCM. Source: Authors own work.

## 5 | CONCLUSION

Based on the systematic literature review, we identify 31 critical factors that determine the adoption of SSCM initiatives. Among the

critical factors, 11 were drivers, eight were enablers, and the remaining 12 were barriers. To rank these critical factors from the perspective of the Ethiopian coffee supply chain, a survey was conducted with the participation of 115 respondents from the coffee producing

## Barriers: Mean Score



**FIGURE 5** Ranking of barriers to adopt SSCM. Source: Authors own work.

and exporting organizations. Based on the survey, the key drivers that drive the adoption of SSCM initiatives are economic and productivity improvement, competitive advantage, social well-being and social responsibility, reputation and brand image enhancement, supportive organizational culture, and adopting an innovative business model. Moreover, among the list of enablers, cost effectiveness and improvements in overall performance, joint efforts, planning and capacity building monitoring, understanding customer and stakeholder requirements, monitoring and auditing the ongoing supply chain activities, and resources allocation and information sharing within and across organizations are the top-ranked enablers. Finally, from the barriers identified in the literature, difficulty in mindset and cultural changes, lack of proper technology and infrastructure, lack of top and middle management support, lack of government support, high financial costs and lack of resources, and communication gaps and inadequate collaboration between parties are rated as the most relevant barriers from the Ethiopian coffee industry perspective.

## 5.1 | Theoretical implications

This study can be considered as a complement of the researches conducted by Jia et al. (2018), Saeed and Kersten (2019), and Guimarães et al. (2022) by addressing the limitations and future research directions proposed by researchers. According to Jia et al. (2018), the current literature on SSCM lacks the opinions of suppliers from

developing countries and industry-specific empirical research. In addition, Saeed and Kersten (2019) advised further research to identify and classify critical factors in different industries and geographical areas. Guimarães et al. (2022) called for more research that shows the perspectives of other coffee-producing countries in addition to the Brazilian coffee industry. Therefore, this study is expected to contribute to the existing sustainability literature by bringing in the perspectives of suppliers in developing countries, specifically, Ethiopia. In addition, this study has tried to enrich the literature by undertaking empirical research to identify and classify critical factors from the perspective of the Ethiopian coffee industry. Therefore, this research has theoretical significance because it addresses the limitations of the existing literature on SSCM, especially in the agrifood sector, and contributes to a holistic global perspective. Finally, this research can be used as a reference to conduct similar research in the agrifood and coffee industry in the context of developing countries such as Ethiopia.

## 5.2 | Managerial implications

There is a growing interest in adopting SSCM in the coffee industry (Guimarães et al., 2022), however, the implementation of sustainability initiatives is challenging in agrifood supply chains (Yadav et al., 2022). Hence, this research may help managers and stakeholders to understand and create awareness concerning the critical

factors that determine the successful implementation of SSCM initiatives in developing countries and ensure sustainable development. This study can also be used as an input by government regulatory bodies and policymakers to develop strategies pertaining to the key critical factors in adopting SSCM initiatives in the Ethiopian coffee industry.

### 5.3 | Limitations and future research

This study has limitations but also presents an opportunity for further research in the future. The first limitation stems from the focus on coffee producers and exporters. Therefore, future research can include more stakeholders, such as government regulatory agencies and non-governmental organizations involved in regulating and supporting the Ethiopian coffee supply chain. Second, this study used a questionnaire survey to collect empirical data from suppliers in the Ethiopian coffee industry. Thus, in the future, this type of research could be enhanced by employing in-depth interviews and case studies, which could result in a qualitative investigation of critical factors and the development of specific strategies to integrate sustainability. The other limitation of the study emanates from the descriptive statistics method employed to analyze the empirical data and rank the critical factors. In the future alike studies should be undertaken by applying more advanced methodology to obtain a deeper knowledge. Finally, this study was geographically limited to the Ethiopian coffee industry. Hence, similar research can be conducted in other developing and African countries to complement this study with a holistic perspective that can significantly contribute to both theory and practice.

### CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest that could influence the work reported in this study.

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