


Article

Striving for Enterprise Sustainability through Supplier Development Process

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Abstract: Much research has already been dedicated to the impact of the supply chain, but less attention has been paid to the potential of supplier development (SD) processes in strengthening enterprises' sustainability performance. This study aimed to indicate how the approach to socially responsible supplier development has changed over the years (2010–2019) in the automotive sector considering the types of practices and the applied areas of social responsibility. The study was based on original and empirical content analysis research of sustainability reports of car producers. To identify changes in the approach to socially responsible supplier development (SRSD) practices, 17 criteria were identified within direct as well as indirect types of supplier development practices. Considering areas of social responsibility, we applied the core subjects of social responsibility based on the ISO 26000 standard. The findings revealed that during the analyzed period, there has been a recursive use of both direct and indirect SD practices by the car producers but to varying degrees. The environmental protection, human rights, labor practices, fair operating practices, and organizational governance issues were the major concerns. When comparing 2010 and 2019, a clear increase was observed within all identified SRSD initiatives. The study outputs and examples of SRSD practices of car producers can act as a role model for automotive suppliers as well as other industries regarding how to incorporate sustainability into supplier development processes.

Keywords: socially responsible supplier development; supply chain; content analysis; sustainability reports; ISO 26000; car producers; direct and indirect supplier development



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1. Introduction

Companies worldwide are practicing sustainability to achieve improvement in the economic, environmental, and social performance of their operations [1–7]. When considering corporate social responsibility (CSR), the need to care about relations with key stakeholders lies at the core of the concept [8–12]. A socially responsible company should not only embrace responsibility for the impact of its operations on society and environment but should also consider the impact through its supply chain. Engagement with suppliers is fundamental to practice social responsibility and integrating social responsibility into supply chain may bring long-term environmental, social, and economic value for all stakeholders [13,14].

The capabilities and skills of suppliers to deal with CSR challenges play critical roles in producers' CSR performance. Suppliers have the power to highly influence the producers, and irresponsible supplier behavior is able to damage public image and reputation and can also be severely expensive for a company. Therefore, the focus on cost and quality issues in supply chain management must be expanded and also include environmental and social aspects [15]. The automotive industry is facing many challenges nowadays to when striving for sustainability. Car manufacturers have to deal with increasing expectations of their stakeholders—regulations, customers, and society demand reduction of CO₂ emissions, alternative-power trains, or new mobility concepts. To address these problems, it is not

enough to take into account sustainable production practices in their daily operations. In the automotive industry, up to 75% of the cost of a vehicle comes from parts sourced from suppliers [16]; therefore, it is of utmost importance that car manufacturers collaborate directly with suppliers and demand socially responsible behavior in their supply chains. The way the car producers are trying to assure sustainability in their supply chain is the implementation of socially responsible practices into their supplier development process, which is already in place due to the obligatory requirements of their implemented quality management system.

Car manufacturers increasingly try to disclose such kind of information in their sustainability reports [17]. Some examples of socially responsible supplier development disclosed in these reports are: evaluation of the suppliers' environmental and social performance, supplier training, sharing sustainability knowledge, and collaboration on product improvement that ends in a better corporate social responsibility (CSR) performance for the supplier.

Previous studies on sustainable supplier management indicate that evaluating suppliers' sustainability has attracted great attention thus far, while suppliers' sustainability development has been widely neglected [18]. Therefore, this study has tried to fill this gap by providing knowledge on the supplier development practices that car automakers use to make their supply chains more sustainable. In particular, the paper aims to indicate how the approach to socially responsible supplier development has changed over the years (2010–2019) in the automotive sector considering the types of practices and the applied areas of social responsibility. Hence, we formulated two main research questions which are central to the empirical part:

RQ1: How have the types of socially responsible supplier development practices of car producers in Europe changed over the years?

RQ2: How have the areas of social responsibility changed in which supplier development activities were undertaken by car producers in Europe?

The rest of the paper is structured as follows: the next section provides an overview of the supplier development literature, with a particular emphasis on studies focusing on socially responsible supplier development. This is followed by a section dedicated to methodology used in the research process. The research findings are then presented concerning the types of supplier development practices as well as areas of social responsibility they are focused on. Next, the most common socially responsible supplier development practices of car producers in Europe are presented. The paper ends with discussion section and conclusions including limitations as well as recommendations for further research.

2. Literature Review

2.1. Supplier Development

The supplier development (SD) term was first used by Leenders [19] when describing activities of manufacturers (Buyer) directed towards increasing the number of suitable suppliers and improving a supplier's performance. Studies on supplier development report that buying firms can use various supplier development strategies to improve supplier performance. The framework of these strategies includes (1) supplier assessment, (2) providing suppliers with incentives for improved performance, (3) instigating competition among suppliers, and (4) direct involvement of the buying firm's personnel with suppliers through activities such as training of suppliers' personnel [20,21].

Very often, supplier development activities are classified by the manufacturer's level of commitment to a specific supplier [21–26]. This differentiating factor enables us to distinguish two types of supplier development practices: indirect and direct supplier development. In the case of indirect supplier development, the manufacturing firm engages with no or only limited resources from a specific supplier. Some common techniques used in indirect supplier development include supplier assessment, supplier recognition, communicating feedback, plant visits, performance measurement, and supplier auditing [20,23]. When using a direct type of supplier development, the manufacturer plays a

more active role. Direct supplier development might include activities such as training of the suppliers' personnel given by the manufacturing firm, providing temporary on-site support to improve further cooperation, providing equipment and tools, or even spending capital resources on suppliers [27,28]. Therefore, direct supplier development is a more collaborative approach based on exchanges between manufacturer and supplier, resulting in a bilateral deployment of relationship-specific investments [29]. Wagner [26] found that indirect supplier development improves suppliers' product and delivery performance, while direct supplier development improves supplier capabilities. When practicing indirect supplier development, the buying firm makes use of communication and external market forces to achieve improvements in supplier's performance. In contrast, in a direct supplier development programme, the buying firm plays an active role and dedicates its human and capital resources to a specific supplier to solve a particular problem. Therefore, the practices of direct supplier development transfer the knowledge and qualifications into the suppliers.

In the automotive sector, supplier development practices have gained popularity owing to quality management systems obligations spread throughout the supply chain. The present global technical specification and quality management standard for the automotive industry (the IATF 16949: 2016) discusses the supplier development requirements in Section 8.4.2.5 of this standard, named supplier development. This section points out performance-based supplier development activities. The supplier monitoring process should constitute an input to the supplier's development practices [30]. Both short and long-term goals should be taken into account within these development activities. Short-term activities would generally focus on supplier's products and would require defining suitable methods to assure the quality of purchased products. Conversely, long-term activities would concentrate on the supplier's quality management system and manufacturing processes and consider such activities as audits, training, and efforts that enhance the quality assurance between the buying company and suppliers and the organization, which in turn will reduce the risk.

2.2. Socially Responsible Supplier Development

Supplier development was defined by Wagner [25] as activities supporting the supplier to enhance the performance of its products and services or improving the supplier's capabilities. Bearing in mind this explanation of supplier development, the socially responsible supplier development (SRSD) can be defined as activities supporting the supplier to enhance its corporate social responsibility (CSR) performance. In other words, SRSD means specific supplier development efforts made by a buying firm to improve the capability of its foremost suppliers to implement the concept of social responsibility. Socially responsible supplier development implementation may be an example of a win-win strategy by which both suppliers and the buying firms' CSR performance may be improved [31,32]. Integrating economic, environmental, and social targets into strategic supplier portfolio configuration reduces supply risks and promotes the achievement of the sustainability goals of the purchasing company [33].

The empirical results of Wu [34] show that socially responsible supplier development practices significantly and positively affect SME suppliers' sustainability-oriented innovations. The results of [32] suggest that while supplier development practices help to improve the suppliers' social performance and the buying firm's operational performance, they do not pay off in terms of economic performance.

Moreover, suppliers' capabilities and skills to deal with sustainability challenges play a critical role in the producers' corporate social responsibility performance also for another reason. Irresponsible supplier behavior is able to damage public image and reputation and can also be severely expensive for a company. Stakeholders can punish producers severely when they become aware of unsustainable practices among suppliers [35], arguing that buyers are able to prevent such practices by means of supplier selection [36,37] and development. We have all witnessed many scandals of producers suffering problems because of

their suppliers' irresponsible behavior, for example Mattel (its supplier produces defective toys) and Nike or Sainsbury (labor abuses in their suppliers' plants). Therefore, ensuring a socially responsible supply chain requires special attention of the producer. Properly designed activities within supplier development seem to be of great value. Lu et al. [31] suggest that information sharing, supplier evaluation, and supplier development activities are the most relevant dimensions for socially responsible supplier development. In a socially responsible supplier development program, SD information sharing is about the transfer of CSR knowledge to suppliers. Through information sharing, suppliers can learn CSR knowledge such as the fundamental concepts, related practices, implementation guidelines, and outcome measurements, etc. Socially responsible supplier evaluation relies on the use of an audit and feedback system to monitor suppliers' CSR implementation and outcomes [38]. However, the study of Subramaniam et al. [39] revealed that simply monitoring suppliers and giving them incentives are not effective ways of enhancing social responsibility among suppliers; instead, supplier development and collaboration such as technical support and training are needed. These results are also supported by the study of Alghababsheh and Gallear [40], which examined the individual impact of assessment and collaboration practices on suppliers' social performance and revealed that assessment practices are less likely to influence suppliers to improve social performance compared to collaboration practices. To understand the evolution of socially responsible supplier development practices, we undertook a preliminary literature review. Since our study is not a meta-analysis, we decided to use the Web of Science database as one of the worldwide recognized databases as a reference to search for the studies within the topic of interest. We searched for two sets of keywords: (1) supplier socially responsible practices and (2) socially responsible supplier development between the years 2010–2020. The search results for the first and second keywords were, respectively, 50 and 38 papers. The results of the search are valid for the day of 28 September 2020. For the studied period, the authors identified sixteen papers related to the topic of socially responsible supplier development practices (see Table 1). When analyzing the search results from the last ten years, we noticed no rising trend in the amount of research devoted to socially responsible supplier development, in comparison to what is seen in the topic of socially responsible supply chains [41], which is definitely a more complex and capacious topic. In the years 2010, 2016, 2017, and 2020, only one paper was published; two papers were published in 2019, three in 2012 and 2015, and four in 2018. In the years 2011, 2013, and 2014, no papers on socially responsible supplier development were found in the WoS database. None of the papers published during the studied period considered this topic within the automotive sector, reinforcing the necessity of addressing the research gap.

The integration of sustainability into supply chains is a significant and evolving area of research [42]. The environmental dimension is significantly better represented in the literature than the social dimension. According to Ashby et al. (2012) [43], these two dimensions are treated separately in the literature with limited insight on how to integrate them, and current supply chain management and sustainability research provides limited practical outputs. Both assessment and collaboration activities positively impact the extension of sustainability into suppliers, and it is indicated that assessment alone is not enough. The identified enablers of these practices can be internal, e.g., the firm's environmental commitment, senior management support, and the availability of resources, or external, e.g., trust and clarity objectives in the buyer–supplier relationship [44].

Table 1. List of studies related to socially responsible supplier development.

Paper	Type of Research	Targeted Countries	Key Findings
[38]	Empirical analysis. Plant-level survey	Canada (three industries)	Four categories of suppliers' socially responsible practices are identified and validated: 1. supplier human rights; 2. supplier labor practices; 3. supplier codes of conduct; 4. supplier social audit. The relationship between the drivers and the supplier's socially responsible practices are explored.
[43]	Theoretical. A systematic review of current SCM literature	–	Although two dimensions of supply chain sustainability, the social and environmental dimensions, are treated separately in the literature, there is a limited amount of research on how these dimensions can be integrated.
[44]	Structured literature review	–	The analysis is focused on the impact of assessment and collaboration on the sustainable performance of the supply chain. The paper concludes that assessment is not enough to improve sustainability; some degree of collaboration among the firms is necessary. They provide a list of enablers to adopt a collaborative approach based on the supplier development model of Krause et al. (2000).
[31]	Both conceptual and empirical	China	The paper integrates the concepts of corporate social responsibility (CSR) and supplier development into the concept of socially responsible supplier development (SRSD). Additionally, the paper proposes an SRSD scale system to assess the level of supplier development of an organization.
[37]	Structured literature review	–	The paper is state of the art in socially responsible sourcing (SRS). This concept includes human rights, community development, and ethical issues, but excludes environmental concerns. It provides a classification of the papers dealing with socially responsible sourcing based on the theories they use.
[32]	Empirical analysis. Literature review and survey	Spain	The paper investigates the impact of social supplier development practices on both suppliers social performance and economic and operational results, showing that it has a positive effect on the suppliers social performance and the operational performance of the buying firm, but economically they do not pay off.
[45]	Analytical model. Hierarchical linear modelling	International (22 countries)	The paper investigates the effect of different environmental factors on sustainable supplier development practices. The effect of three drivers, namely, coercive, normative, and mimetic pressures, and the firm's capabilities and supplier integration are assessed.
[33]	Analytical. Case study	–	The paper provides an analytical approach to supplier selection using both traditional performance objectives and sustainability-related aims. The authors used a hybrid model of the analytic network process (ANP) and goal programming (GP).

Table 1. Cont.

Paper	Type of Research	Targeted Countries	Key Findings
[34]	Empirical analysis. Literature review and survey	Taiwan	The paper combines the concepts of socially responsible supplier development with organizational innovation, focusing on SMEs. A measurement scale to assess supplier organizational innovation was developed to relate it to SRSD. The study provides practical managerial recommendations to improve the sustainability performance of SMEs.
[36]	Analytical. Case study	China	The paper proposes a hybrid analytical model to select the most appropriate supplier, including variables based on expert opinion, with a high degree of vagueness and ambiguity. The authors used a hybrid model that combines TISM and FANP.
[46]	Empirical. Case study	India	This paper explore the role of SD as an effective strategy in building the capabilities of addressing social issues.
[47]	Empirical. Case study	India	This study compares the economic and social variants of institutional theory to investigate whether efficiency or legitimacy seeking drives the adoption of supplier development practices.
[18]	Analytical model, applied to a case study	Iran	This study proposes a framework to evaluate and monitor suppliers continuously and divides the sustainable supplier development process into several subprocesses. By implementing this model, the buying firm identifies the source of inefficiencies in the supplier's sustainability performance.
[39]	Empirical. Survey	Malaysia	By empirically testing the impacts of four proposed supplier development practices, supplier development and supplier collaboration have a significant impact on their social performance.
[48]	Empirical. Exploratory case study	UK	One major insight is that for socially responsible purchasing to occur, there are four main behaviors that suppliers need to demonstrate to buyers, namely, demonstrating trust, transparency, engagement, and a knowledge development capability. The authors suggest that socially responsible supplier development should be introduced early in the process of supplier selection, at a pre-selection stage rather than at the post-selection evaluation stage.
[40]	Empirical. Survey	UK	This study focus on the impact of assessment and collaboration on suppliers' social performance and how these effects can be strengthened by the level of social capital embedded in the buyer-supplier relationship. Based on a survey of 119 manufacturing companies, the authors found that assessment practices are less likely to influence suppliers to improve social performance compared to collaboration practices, but can have a significant positive effect when relational and structural capital are manifested in the relationship.

Having no control over the suppliers' actions affects the buyer's reputation, and the associated risks are the reason why it is necessary to consider the supplier's sustainability performance. The results of Sancha [45] show that mimetic pressures have a positive effect on the adoption of sustainable supplier development and that this influence is positively

moderated by the firm's level of supplier integration. Contrarily, coercive and normative pressures have no effect on the adoption of sustainable supplier development practices.

The results of Yawar and Seuring [46] indicate that adopting supplier development is an established practice in the dairy industry, which is used by the buyers as a strategy to manage social and societal issues. Findings indicate that such supplier development strategies result in the development of the suppliers' capabilities to deal with related issues of social sustainability. Buying firms initiate indirect and direct supplier development strategies such as supplier assessments, technical investments, financial assistance, and logistic integration to ensure the continuity of the supply base, ultimately improving economic and social performance. The findings of Yawar and Kauppi [47] revealed motivations behind the adoption of similar SD strategies in addressing sustainability. They found that both private and cooperative dairies adopt similar SD practices to build supplier capabilities and improve buyers and suppliers' social and economic performance. Private dairies imitate the cooperatives' SD practices to survive the competition, i.e., economic performance is the main reason behind their isomorphism. On the other hand, cooperatives take up SD practices more for legitimacy and even philanthropic reasons, partly taking advantage of the long-term economic benefits of developing the supplier community.

Bearing in mind the evolution of socially responsible supplier development, the specific change in these activities has been indicated by the study of Cole and Aitken [48], i.e., the movement of post-selection supplier development activities to the pre-selection stage to align sustainability goals and reduce risk. The supplier's development activities previously situated at the post-selection stage are now performed at the pre-selection stage. The shift of the practices to the beginning of the process is caused by the fact that suppliers must demonstrate a commitment to sustainability by implementing improvements highlighted in corrective action reports at the pre-selection point before any financial transactions occur.

3. Methodology

3.1. Sample Selection and Data Collection

This study on the evolution of socially responsible supplier development practices in automotive sector was based on data disclosed in the sustainability/CSR reports of eight car producers located in European Union member states. The authors decided to investigate sustainability reports from the EU as these companies are subject to the same legal conditions and EU directives, especially those related to disclosing environmental and social issues. We used CSR reports as the data source because widely used sustainability reporting frameworks, e.g., GRI and UN Global Compact require to disclose information on supply chain. The frameworks are also recommended by Directive 2014/95/EU to guide companies' disclosure and provision of information about the organization's approach in order to prevent and mitigate negative social and environmental impacts in its supply chain. In order to analyze these reports, the authors applied the content analysis method.

To find out how the approach to socially responsible supplier development has changed over the years in the automotive sector, it was necessary to select a sample of reports that spanned a long time range. This study focused on car producers as they represent large companies; thus, many of them have been reporting for a long time, and these companies have the highest impact on the automotive sector through their socially responsible supplier development practices. In addition, we intentionally decided to investigate the sustainability reports of companies from European Union countries as they are subject to the same legal conditions, especially those related to the disclosure of environmental and social issues.

The sustainability reports of the car producers from the European Union were downloaded from the Global Reporting Initiative database for the years 2010–2019 (the year in which the study was conducted (2019) was the last available publication year in the GRI database). The literature analysis enabled us to find that papers related to socially responsible supplier development practices started to be published from 2010; hence, we

started our analysis from that date. It is worth mentioning that GRI reports the publication year, which indicates the calendar year in which the report was published, not the year the report covers. The unavailable and missing GRI database reports, including the reports from 2019, were collected from the car producers' websites. Only reports that were published in English were selected for this study. Finally, the reports published in English, together with those that were available, gave a total of 76 sustainability reports admitted to the study. Toyota Europe and Vauxhall Motors were excluded from the analysis as they had not disclosed CSR reports for several years. Moreover Audi AG and Porsche AG were excluded as they belong to the Volkswagen Group (see Figure 1).

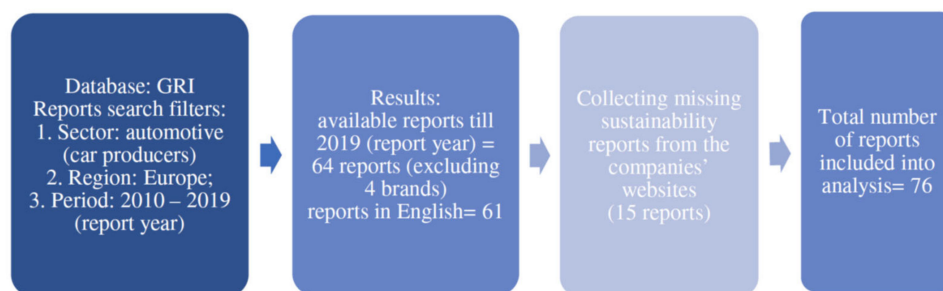


Figure 1. Process of collecting sustainability reports.

3.2. Content Analysis

To analyze the sustainability reports of car producers, we used the content analysis technique, which is a commonly used research tool for assessing organizations' social and environmental disclosures [49]. Two approaches to content analysis can be distinguished: index studies and amount–volume studies. Index studies generally check for the presence or absence of specific information items, whereas the volumetric ones check for the overall volume of disclosure, most frequently by counting words, sentences, or proportions of an A4 page (Vourvachis, 2007; Vourvachis and Woodward, 2015) [50,51]. We applied the index approach as in this study we were interested in the evolution of socially responsible supplier development practices, so the variety and focus of these activities undertaken by the car producers in the analyzed period, and not the intensity of their disclosure, was the subject of the investigation.

In order to find out how socially responsible supplier development practices evolved, both the types of supplier development activities and the areas of social responsibility those activities were focused on; the authors identified assessment categories based on the literature review (especially the study of Krause [52] and Wagner, 2010 [26]) as well as the international standard on social responsibility (ISO 26000). Four criteria were identified within the type of direct supplier development practices and six criteria within the indirect type of supplier development (see Table 2). Furthermore, considering areas of social responsibility of the supplier development types of practices referred to, we took the seven core subjects of social responsibility based on the ISO 26000 standard as the criteria (see Table 3).

Table 2. Supplier development criteria with examples of practices.

Direct SD	
1. Training and education of a supplier's personnel. A2	Workshops and training organized and conducted by buyer (including e-learning).
2. Temporary personnel transfer. A2	Transfer of buyer personnel to the supplier to share knowledge, improve supplier capabilities, provide technical support etc.
3. On-site consultation, problem identification analysis. A2	Buyer helps directly to resolve the supplier's problem (on-site consultation, problem identification, analysis of the causes, finding solutions etc.).
4. Investment in supplier's operations and equipment. / A2	Financial investment related to improving product or processes, to finance tools or equipment needed to manufacture the buying firm's products.
Indirect SD	
1. Self-regulation. A2	Supplier's code of conduct, setting standards and rules for cooperation.
2. Information sharing. A2	Supplier days, communication of the firm's strategic targets to suppliers, supplier plant visits.
3. Supplier evaluation. A2	Regular, planned, and proactive measurements of supplier performance.
4. Supplier selection. A2	First step in supplier development, setting selection criteria, ranking the suppliers (for further strategic supplier development).
5. Supplier auditing. A2	Checking if suppliers are able to fulfil buyer's specific requirements, certification, ensuring that the supplier undertakes continuous improvement and operates efficiently.
6. Supplier recognition, rewards. A2	Encourage improved results and reward performance; reward suppliers for outstanding performance, further motivating quality and encouraging suppliers to strive for excellence in their products, service levels, and operations.

Source: based on Krause, 1999 [52] and Wagner, 2010 [25].

Table 3. Social responsibility core subjects based on ISO 26000.

Social Responsibility Subjects and Issues	
1. Organizational governance Decision-making processes and structures	
2. Human rights Due diligence Human rights risk situations Avoidance of complicity Resolving grievances Discrimination and vulnerable groups Civil and political rights Economic, social, and cultural rights Fundamental principles and rights at work	5. Fair operating practices Anti-corruption Responsible political involvement Fair competition Promoting social responsibility in the value chain Respect for property rights
3. Labor practices Employment and employment relationships Conditions of work and social protection Social dialogue Health and safety at work Human development and training in the workplace	6. Consumer issues Fair marketing, factual and unbiased information, and fair contractual practices Protecting consumers' health and safety Sustainable consumption Consumer service, support, and complaint and dispute resolution Consumer data protection and privacy Access to essential services Education and awareness
4. Environment Prevention of pollution Sustainable resource use Climate change mitigation and adaptation Protection of the environment, biodiversity, and restoration of natural habitats	7. Community involvement and development Community involvement Education and culture Employment creation and skills development Technology development and access Wealth and income creation Health Social investment

A database was created in a spreadsheet including the socially responsible supplier development (SRSD) practices found in the reports of the eight car producers. The stages of the study are presented in Figure 2. First, for each report, the SRSD practices were identified. Secondly, each identified SRSD practice was classified using the supplier development criteria (see Table 2) as well as the social responsibility core subjects (see Table 3), e.g., a risk management system that refers to the supply chain (SRSD practice) encompasses different supplier development activities: supplier evaluation, the audit of some suppliers (indirect SD practices), and can entail on-site consultation or problem identification analysis (indirect SD practice). Additionally, the risk management system is related to the different social responsibility core subjects: human rights, labor practices, and environmental requirements. Thirdly, once the SRSD practices of a given report were classified, we characterized the sustainability report as follows: following an index content analysis approach, a simple binary coding scheme was used to register the presence or absence in the report of at least one SD practice (Table 2). Thus, for every report and SD practice type, a score of 1 meant that the report included at least one SRSD practice of the type, and a score of 0 meant that not a single SRSD practice of the type was found. By the same token, each report was also characterized by the social responsibility core subjects in a similar way. Thus, for every report and social responsibility core subject, a score of 1 meant that the report included at least one SRSD practice referring to the social responsibility core subject, and a score of 0 meant that not a single SRSD practice related to the social responsibility core subject was found. A total of seventeen parameters, four direct SD practices, six indirect SD practices, and seven social responsibility core subjects, were taken into consideration.

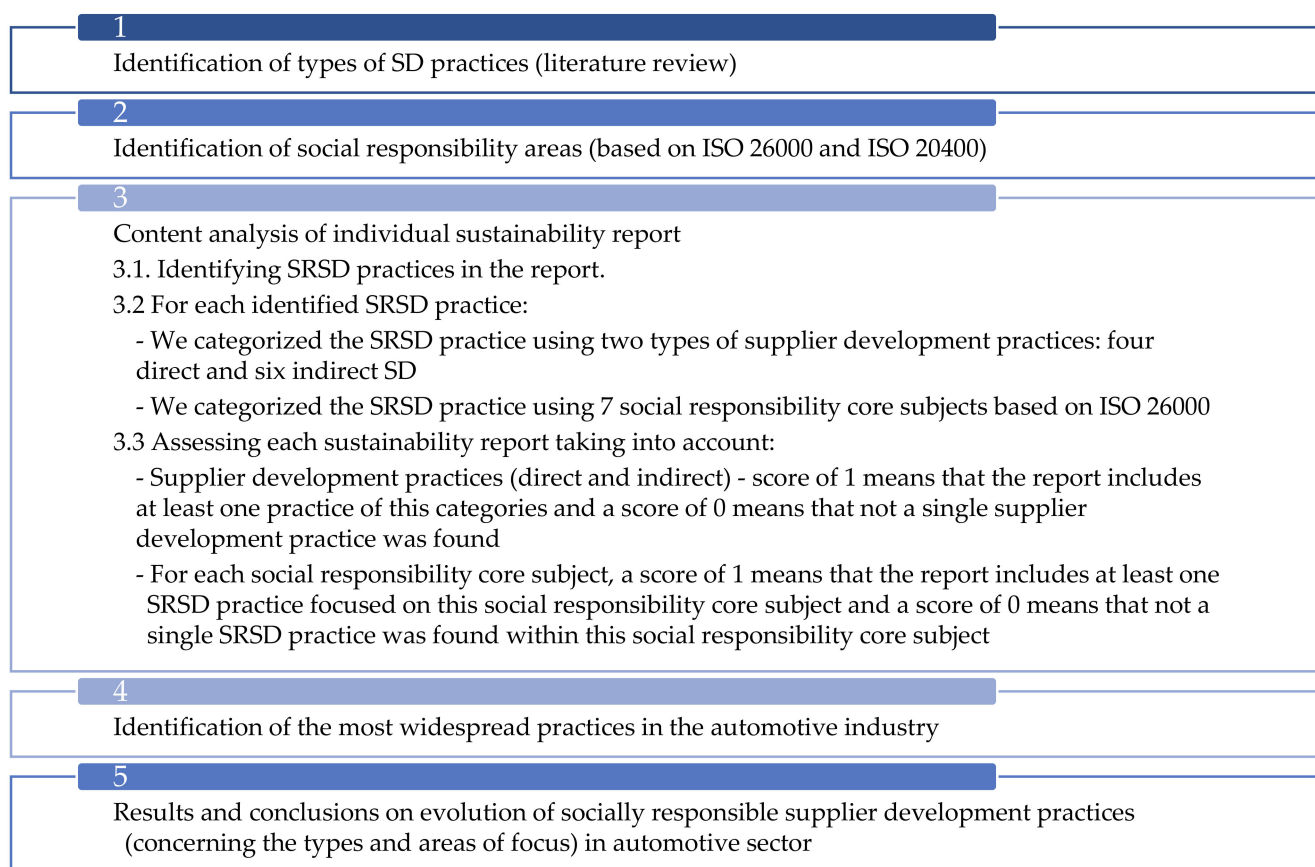


Figure 2. Stages of the study.

Additionally, and based on the previous analysis, we identified the most widespread SRSD practices among car producers, and we characterized the sustainability reports by the

presence or absence of these practices, providing a complementary picture of the evolution of socially responsible supplier development in the automotive industry in Europe.

4. Results

We analyzed 76 reports of eight car producers. The vast majority of the reports were prepared according to the GRI guidelines. Only Jaguar Land Rover (4 of 9 reports) and Renault (2 of 10 reports) used different frameworks to disclose their sustainability performance. Using the same reporting framework means using the same rigor when developing the report and thus does not disrupt the comparison. This fact is highly valuable for the quality of the research where the content analysis is applied and the evolution of practices is analyzed. Some of the sustainability reports were completely inaccessible: BMW Group and Jaguar Land Rover reports from 2011, PSA report from 2012, and one report of Volkswagen AG from 2015 (see Table 4).

Table 4. Classification by the GRI type of the reports of each brand and the corresponding year.

Reported Year	BMW Group	Daimler	FCA	Jaguar Land Rover	PSA	Renault	Volkswagen AG	Volvo Group	Total
2010	GRI	GRI	GRI	GRI	GRI	GRI	GRI	GRI	8
2011		GRI	GRI		GRI	Non-GRI	GRI	GRI	6
2012	GRI	GRI	GRI	GRI		Non-GRI	GRI	GRI	7
2013	GRI	GRI	GRI	GRI	GRI	GRI	GRI	GRI	8
2014	GRI	GRI	GRI	Non-GRI	GRI	GRI	GRI	GRI	8
2015	GRI	GRI	GRI	GRI	GRI	GRI		GRI	7
2016	GRI	GRI	GRI	Non-GRI	GRI	GRI	GRI	GRI	8
2017	GRI	GRI	GRI	GRI	GRI	GRI	GRI	GRI	8
2018	GRI	GRI	GRI	Non-GRI	GRI	GRI	GRI	GRI	8
2019	GRI	GRI	GRI	Non-GRI	GRI	GRI	GRI	GRI	8
Total	9	10	10	9	9	10	9	10	76

4.1. Direct Socially Responsible Supplier Development Practices

The first analysis calculated the percentage of reports disclosing information concerning the type of direct socially responsible SD practice. As shown in Figure 3 and Table 5, two clear groups emerge. The first includes the most common direct SD practices disclosed in the reports: *training and education of a supplier's personnel* and *on-site consultation and problem identification analysis*. The second group contains the SD practices that carmakers seldom disclose in their reports: *temporary personnel transfer* and *investment in supplier's operation and equipment*. Temporary personnel transfer was not disclosed at all in the analyzed reports. *Investment in supplier's operations and equipment* appeared only in specific improvement cooperation programs of a buying firm and its suppliers. *Training and education of a supplier's personnel* appeared explicitly in compulsory or voluntary e-learning and face-to-face training courses programs and specific programs (e.g., reducing CO₂ emissions), sustainability management systems, or the manufacturing management system, including a sustainability area. *On-site consultation* and *problem identification analysis* were frequently found as part of the risk management system and due diligence process when a non-compliant supplier was asked to define an action plan where the buying firm provides orientation (e.g., ad hoc teams), but also in supplier improvement cooperation programs.

When we considered the time span of 2010 to 2019, it was observed that trainings as well as on-site consultation were always disclosed in the reports despite the fact that the percentage of these practices fluctuated. This might be caused by the real needs of the suppliers and the identified problems to be resolved. In 2019, on-site consultation and problem identification were disclosed in all reports and training, and education of a supplier's personnel practice was found in 88% of the analyzed reports.

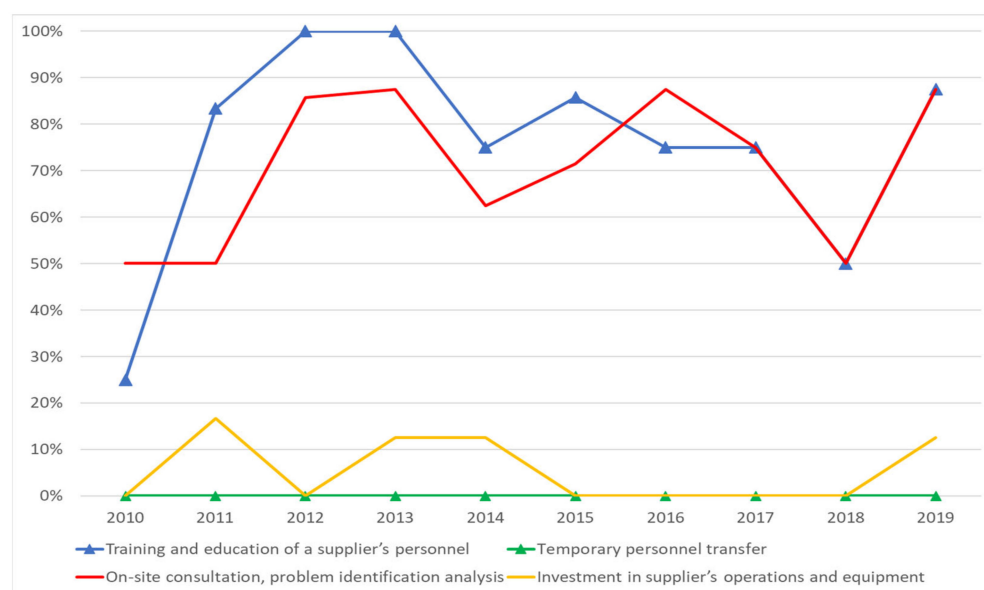


Figure 3. Percentage of automakers disclosing direct types of supplier development practices in the reports.

Table 5. Percentage of automakers disclosing direct types of supplier development practices in the reports.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sample size	8	6	7	8	8	7	8	8	8	8
Training and education of supplier's personnel	25%	83%	100%	100%	75%	86%	75%	75%	50%	88%
Temporary personnel transfer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
On-site consultation, problem identification	50%	50%	86%	88%	63%	71%	88%	75%	50%	88%
Investment in supplier's operations and equipment	0%	17%	0%	13%	13%	0%	0%	0%	0%	13%

4.2. Indirect Socially Responsible SD Practice

The results of the analysis that calculated the percentage of automakers disclosing information concerning the indirect type of SD practices are presented in Figure 4. In this case, we also distinguished two groups of such practices. The first group includes self-regulation, information sharing, supplier evaluation, and supplier auditing, which are practices disclosed mostly by the automakers. *Self-regulation* practices appear in the reports in the form of environmental and sustainability requirements, codes of conduct, and guidelines, defined by a single firm or with industry collaboration in sustainability initiatives. *Information sharing* is practiced in supplier information meetings and forums, supplier portals, and improvement and cooperation programs with a specific supplier or at industry collaboration levels. *Supplier evaluation* appears in reports as an essential part of compliance and risk management systems and due diligence while monitoring the evolution of sustainability improvement programs. It is frequently found in the form of self-assessment questionnaires. *Supplier auditing practices* are widely used in the industry to verify compliance with the different sustainability criteria and requirements.

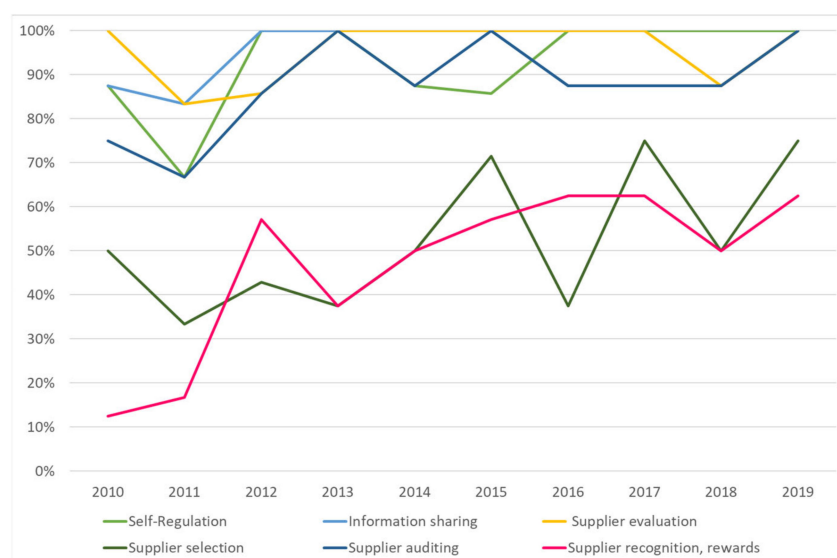


Figure 4. Percentage of automakers disclosing indirect types of supplier development practices in the reports.

The second emerged group comprises practices such as supplier selection and supplier recognition and awards. Although they are not disclosed by all the automakers, there was a visible increase in the proportion of companies disclosing such types of SD practices. *Supplier selection* practices appear in the reports in the form of sustainability criteria in supplier selection or supplier rating systems. *Supplier recognition* and *rewards* practices are usually part of the awards used by suppliers to boost supplier development in other areas and have included sustainability criteria for the last decade as a global category or divided into environmental, social, and ethical performance. Within the last kind of supplier development practices (supplier recognition, rewards), we observed the most visible difference in disclosure when comparing reports from 2010 and 2019 (see Table 6).

Table 6. Percentage of automakers disclosing indirect types of supplier development practices in the reports.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sample size	8	6	7	8	8	7	8	8	8	8
Self-regulation	88%	67%	100%	100%	88%	86%	100%	100%	100%	100%
Information sharing	88%	83%	100%	100%	100%	100%	88%	88%	88%	100%
Supplier evaluation	100%	83%	86%	100%	100%	100%	100%	100%	88%	100%
Supplier selection	50%	33%	43%	38%	50%	71%	38%	75%	50%	75%
Supplier auditing	75%	67%	86%	100%	88%	100%	88%	88%	88%	100%
Suppl. recognition, rewards	13%	17%	57%	38%	50%	57%	63%	63%	50%	63%

4.3. Socially Responsible Supplier Development Practices and SR Core Subjects

Figure 5 and Table 7 presents the percentage of reports disclosing information concerning the SD practices related to SR core subjects. The analysis of its evolution over the years shows two differentiated groups. The first group includes the most popular SR subjects included in the majority of reports, i.e., the environment, labor practices, human rights, organizational governance, and fair operating practices. The other group includes the SR subjects that are seldom mentioned when disclosing SD practices in the reports, i.e., consumer issues and community involvement and development. The focus on environment protection in supplier development practices was present in all analyzed reports within the whole investigated time span.

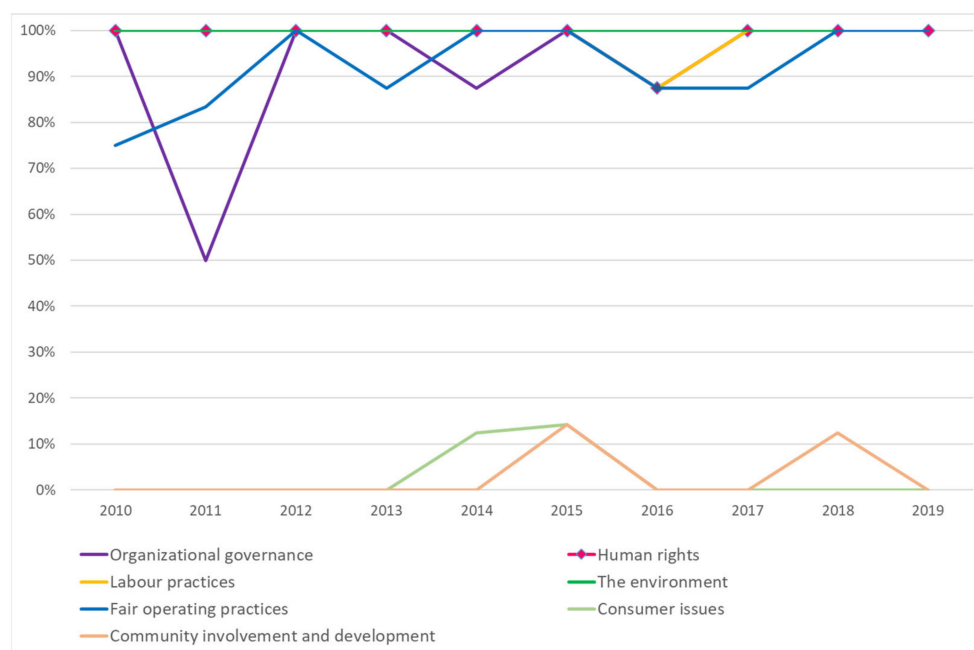


Figure 5. Percentage of automakers disclosing supplier development practices related to each SR core subjects in the reports.

Table 7. Percentage of reports including supplier development practices related to the core subjects of social responsibility.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sample size °	8	6	7	8	8	7	8	8	8	8
Organizational governance	83%	50%	100%	100%	88%	100%	100%	100%	100%	100%
Human rights	83%	100%	100%	100%	100%	100%	88%	100%	100%	100%
Labor practices	83%	100%	100%	100%	100%	100%	88%	100%	100%	100%
The environment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fair operating practices	50%	83%	100%	88%	100%	100%	88%	88%	100%	100%
Consumer issues	0%	0%	0%	0%	13%	14%	0%	0%	0%	0%
Community involvement and development	0%	0%	0%	0%	0%	14%	0%	0%	13%	0%

4.4. The Most Common SRSD Practices

The results of the content analysis of the sustainability reports conducted in the previous stages of the study allowed the identification of the most common activities used within socially responsible supplier development practices and disclosed by car producers in Europe. Six were identified:

- Risk management system;
- Whistle-blower system;
- Raw material extraction and mining;
- Environmental improvement programmes;
- Industry collaboration initiatives;
- Supply chain sustainability management system.

The first activity is the *risk management system*, which is a structured practice based on risk analysis, including supplier evaluation and audit, and subsequent action plans for the cases of non-compliance with the minimum requirements or standards. For example, the BMW risk management system is based on OECD Due Diligence Guidance, while Volvo uses a risk assessment tool developed by Responsible Business Alliance (see Table 8).

Table 8. Examples of risk management systems among the automakers.

BMW	The BMW risk management system is based on OECD Due Diligence Guidance.
Daimler	Daimler has developed a due diligence approach called the Daimler Human Rights Respect System (HRRS) to protect the human rights of employees and to ensure that human rights are respected by the suppliers (Tier 1 and risk-relevant points of the supply chain beyond Tier 1).
FCA	FCA assesses the supplier's overall sustainability risk level using a risk map, which is used to prioritize supplier audits. These audits identify areas of improvement for suppliers.
PSA	PSA uses risk analysis (mapping) to identify and prioritize actual or potential incidents in the supply chain. Where risk is identified, Groupe PSA has a prevention system to implement and monitor specific action plans with involved suppliers to prevent or mitigate any impact to the supply chain.
Renault	Supplier risk monitoring of operations, finances, and CSR (in particular health/safety, social and environmental risks). Suppliers' CSR risks may be identified through risk mapping of specific risks, supplemented by an annual audit program.
Volkswagen	Business partners identified as having an increased corruption risk due to their business and region are also subjected to an in-depth audit. Particular attention is paid to human rights abuses. They follow the OECD Due Diligence Guidance for Responsible Supply Chains.
Volvo	According to the risk assessment tool, Volvo analyzes suppliers based on sustainability assessments to ensure awareness of potential risks and to prioritize them. The Responsible Business Alliance, an industry coalition dedicated to corporate social responsibility in global supply chains, developed this tool.

The next identified activity is related to *raw material extraction and mining*. It comprises actions to foster transparency along the raw material supply chain. Over the last few years, with the development of electric mobility, there has been an increase in the so-called conflict minerals (tin, tantalum, tungsten, and gold) in the automotive industry. Their supply chains have a high risk of human rights violation, labor condition breaches, and unethical behavior that could threaten the future of the communities involved. International initiatives provide a framework to address responsible mineral sourcing issues in global supply chains, such as the Responsible Minerals Initiative (RMI). The Volkswagen Group for example has joined additionally the Responsible Sourcing Blockchain Network (RSBN) for the responsible sourcing of strategic minerals using blockchain technology (see Table 9).

Table 9. Examples of raw material and mineral extraction SD practices of the automakers.

BMW	Action taken on selected raw materials: aluminum, cobalt, lithium, copper, or natural rubber.
Daimler	Daimler has identified 24 raw materials and 27 services whose extraction and further processing/provision (services) pose potential risks to human rights, e.g., they focus on raw materials such as cobalt, mica, or natural rubber. The "Responsible Aluminium Standard" combines ethical, environmental, and social aspects.
FCA	Traceability and mapping of raw materials are essential to more efficiently and pre-emptively mitigate unethical practices that threaten the future of the communities where the raw materials are sourced.
PSA	Material risk mapping has been developed in terms, among others, of questionable CSR conditions (e.g., conflict minerals, mica, cobalt). They also focus on conflict minerals such as gold, tin, tantalum, and tungsten, which can be related to unethical behaviour. They joined the Responsible Minerals Initiative (RMI).
Renault	Renault is a member of the Responsible Minerals Initiative (RMI). The RMI's objective is to implement a responsible supply chain for minerals and materials originating from conflict zones or high-risk areas.
Volkswagen	Concerning the conflict minerals tin, tantalum, tungsten, and gold, they require their suppliers to exclude the use of minerals from smelters not certified in accordance with international standards. They seek cooperation with international organizations, e.g., they use the Risk Readiness Assessment (RRA) and standardized reporting templates of the Responsible Minerals Initiative. The Volkswagen Group joined the Responsible Sourcing Blockchain Network (RSBN) for the responsible sourcing of strategic minerals using blockchain technology.
Volvo	Volvo Group is working with RMI to ensure responsible and sustainable sourcing of tin, tantalum, tungsten, and gold (the so-called conflict minerals), as well as cobalt, implementing the tools and guidelines developed by the RMI, such as reporting templates, to create supply chain transparency and RMI compliance of suppliers in the affected supply chains.

The next commonly used activities are *environmental improvement programs*. These are improvement programs mainly related to the circular economy; the most prevalent type in 2010 aimed to increase the recyclability rate of materials, components, and parts and the substitution of single-use products with reusable ones (e.g., reusable containers); well carbon emission reduction programs were the most prevalent type in 2019, encouraging suppliers to participate in initiatives such as the CDP to disclose their carbon emissions and other particular environmental projects in order to reduce them (see Table 10).

The analyzed car producers are very often involved in different *industry or cross-industry initiatives* to improve sustainability in their supply chain, for example Drive Sustainability, Responsible Business Alliance, or Automotive Industry Action Group (see Table 11).

The last identified activity is the *supply chain sustainability management system*, which includes a comprehensive management system including company-owned systems such as Volvo's Sustainable Purchasing Program or external cross-industry platforms such as Achilles or Ecovadis (see Table 12).

Table 10. Examples of environmental improvement SD practices.

BMW	Encouraging suppliers to report their CO ₂ emissions in the CDP Supply Chain Programme.
Daimler	They promote CDP to assess the environmental impact of the passenger car supply chain. Additionally, they cooperate closely with their most CO ₂ -intensive suppliers to also identify effective CO ₂ reduction measures in this area.
FCA	FCA promotes awareness among suppliers of their impact on climate change. Suppliers are invited to participate in the CDP Supply Chain program.
Jaguar Land Rover	Jaguar Land Rover collaborate with suppliers in different projects, e.g., to reach a closed-loop aluminum production, or reduction of the excessive consumption of single-use plastic.
PSA	PSA involves its core and strategic suppliers in a disruptive innovation process. PSA is member of CDP. They also set ambitious targets for suppliers regarding the percentage of green/recyclable materials. It has organized an upstream and downstream network to promote environmental improvements through the supply chain.
Renault	They implement environmental management company-wide and across the value chain in order to ensure continuous improvement and compliance with regulations and voluntary commitments.
Volkswagen	In 2019, the Volkswagen Group significantly expanded the number of suppliers who they survey as part of the SCP regarding responsibility for our climate and water. They implement other CO ₂ reduction initiatives, e.g., having found that the biggest driver of emissions in the supply chain for electric mobility is the HV battery cell, they implemented compulsory use of renewable energy sources in the manufacture of batteries by suppliers.
Volvo	The Volvo Group is continuously working towards optimizing its supplier base and geographical footprint. An optimized global footprint will reduce lead-time for the customers and actively reduce the CO ₂ footprint.

Table 11. Examples of industry collaboration initiatives.

BMW	BMW is involved in Drive Sustainability and the Responsible Business Alliance (RBA), as well as subsidiary organization, the Responsible Minerals Initiative (RMI), the Initiative for Responsible Mining Assurance (IRMA) to foster transparency in mineral supply chains through their membership and other raw material-specific initiatives.
Daimler	Daimler participates in automotive industry initiatives such as the Drive Sustainability Initiative, the German Association of the Automotive Industry (VDA), as well as in cross-industry international initiatives such as the UN Global Compact and groups of national sustainability initiatives such as "econsense—Forum Nachhaltige Entwicklung der Deutschen Wirtschaft e.V."
FCA	FCA fosters dialogue with the supply base by working closely with many industry and supplier organizations, including the Automotive Industry Action Group (AIAG).
Volkswagen	To avoid duplication and broader coverage of the supply chain, they are involved in automotive industry initiatives, such as the German Association of the Automotive Industry (VDA) or DRIVE Sustainability.
Volvo	Volvo is active in several working groups within the CSR Europe DRIVE Sustainability to develop assessment questionnaires for suppliers (SAQ) and broaden the awareness of sustainability topics in the industry and supply chain.

In order to recognize changes in the most commonly used activities within socially responsible supplier development practices, we compared their appearance in the reports from 2010 and 2019. The obtained results are presented at Figure 6. The difference can be observed in each case. The smallest changes can be observed in environmental improvement programs and risk management systems. Reports from 2010 did not disclose information about a whistle-blower system or collaboration of car producers with industry initiatives. In 2019, all reports disclosed information on supply chain sustainability management systems in place, which indicates the growing importance of socially responsible supply chains in the sustainability performance of the analyzed car producers (see Figure 6).

Table 12. Examples of sustainability management systems of car producers.

BMW	Carmaker's internal system.
Daimler	Carmaker's internal system.
FCA	World Class Manufacturing System (WCM), an integrated manufacturing system (including Environment and Health and Safety among its basic pillars). FCA specialists continued providing WCM methodology and tools to suppliers.
Jaguar Land Rover	Suppliers submit their sustainability performance measures to the Achilles data management system. Achilles collects and validates supplier data and mitigates risks globally.
PSA	Their responsible procurement policy includes a third-party assessment (by Ecovadis) of its suppliers based on CSR criteria.
Renault	They implement environmental management company-wide and across the value chain to ensure continuous improvement and compliance with regulations and voluntary commitments.
Volkswagen	Volkswagen have implemented their own sustainability management system in supplier relations, comprising three stages: prevent, detect, and react.
Volvo	Volvo's Sustainable Purchasing Program looks at specific high risks to people and the environment and includes the following parts: Supplier Code of Conduct to create the right mindset; The Supplier Sustainability Assessment Program; Supply Chain Mapping; Innovation focusing on people and the planet including industry collaboration.

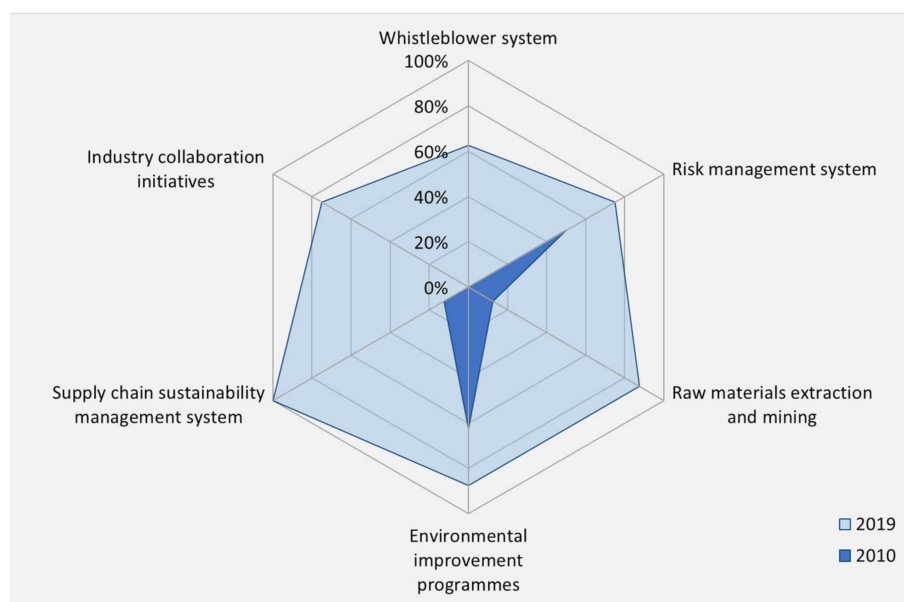


Figure 6. The most common SRSD practices—comparison between 2010 and 2019.

5. Discussion and Conclusions

Enterprise sustainability depends, among other factors, on the capabilities and skills of suppliers to deal with sustainability challenges. This is especially critical when most of the added value is provided by the suppliers, as in the case of car producers. This research provides knowledge on suppliers' development practices that car producers apply to make

their supply chains more sustainable and, in consequence, enhance enterprise sustainability. The paper aimed to indicate how the approach to socially responsible supplier development has changed over the years (2010–2019) in the automotive sector considering the types of practices and the applied areas of social responsibility. The integration of sustainability into supply chains is a significant and evolving area of research [42], but the topic of integrating sustainability into supplier development is thus far poorly investigated. The literature analysis revealed that this study significantly contributes to the existing literature as it is the first study presenting the evolution of socially responsible supplier development practices undertaken by car producers.

The authors classified the socially responsible supplier development (SRSD) practices into two types, indicating the car producer's level of commitment to a supplier, e.g., direct and indirect supplier development practices. Giving an answer to the first research question (RQ1), the portfolio of the socially responsible supplier development practices of the car producers in Europe is diversified; however, two groups within the two types of SRSD practices were observed. Regarding the direct SRSD practices, there has been an increase over the years in the use of *training of supplier personnel* and of *on-site consultation and problem identification analysis*, both becoming standard practices in the industry. This increase took place in the early years of the decade and was maintained over the years. The other two generic practices, *temporary personnel transfer* and *investment in supplier's operations and equipment*, are seldom disclosed in the reports. Indirect SRSD practices were widely used from the beginning of the analyzed period, especially in the case of *self-regulation*, *information sharing*, *supplier evaluation*, *supplier auditing*, and *supplier selection*. However, over the years, there has been an increase in the explicit inclusion of sustainability criteria in the *suppliers' awards* and the *supplier selection* process, which was also confirmed by the findings of Cole and Aitken [48].

The second research question (RQ2) refers to the change in areas of social responsibility in which supplier development activities were undertaken by the car producers in Europe over the analyzed period. In 2010, most SRSD practices were associated with environmental protection, and complementary practices focused on human rights, labor practices, fair operating practices, and organizational governance. The popularity of these practices can be caused by the social, labor, and environmental risks along the supply chain that automakers have to bear. Suppliers are responsible for the main part of the value creation in the automotive industry, but it is the car producers who hold the reputation. Some of the results could be surprising but not unexpected as some of the social responsibility subjects, e.g., consumer issues and community involvement and development, are not disclosed in the reports at all. The explanation may be that the analysis constrains the sustainability supplier development practices and that the consumers of the final products are at the furthest end of the supply chain, thus not directly related to suppliers. With regard to the subject of community involvement and development, there is a noticeable difference, but this area is still not widespread. Suppliers who are not engaging in this subject have not caused such a negative impact on the car producers' social responsibility performance and reputation as compared to engagement in other social responsibility core subjects (e.g., environment, labor conditions, or human rights).

We have complemented the analysis with the evolution of the specific practices related to SRSD that have become an industry standard over the years 2010–2019. With the rapid expansion of the electric car, new risks are also increasing, primarily related to the supply of raw materials. Thus, three identified practices, *risk management system*, *whistle-blower system*, and *raw material extraction and mining*, result from the increase in suppliers' dependence in geographic areas where the minimum legal requirements regarding human rights and labor conditions may not be guaranteed. A risk management system can help companies reduce the cost of evaluating and auditing suppliers. This is because the need to audit the supply chain is proportional to the assessed risk. Therefore, they can focus on the companies or regions with potential higher risks.

Collaboration in the industry towards the standardization of sustainable practices in the supply chain is another trend in the automotive industry in Europe. In this sense, sustainability has become a threshold rather than a distinctive capability. Thus, for example, the *Drive Sustainability* is a partnership created to improve the social, ethical, and environmental performance of automotive supply chains (www.drivesustainability.org, accessed on 17 August 2021), including the compliance with regulations, standards, and internal guidelines on the social, ethical, and environmental standards and the capacity building of suppliers by training and information sharing, with a particular focus on the extraction of raw materials. Except for PSA, which follows the more general approach of *EcoVadis*, all the studied carmakers are members of this initiative. European automakers also participate in other initiatives implying industry or cross-industry initiatives, such as the *IMDS* International Material Data System (<https://public.mdsystem.com>, accessed on 25 September 2021), that collects and analyzes all materials present in finished automobile manufacturing, and this has also become an industry standard. European automakers also participate in different cross-industry initiatives such as *RMI* (<https://rmi.org/>, accessed on 17 August 2021) or *CDP* (www.cdp.net, accessed on 17 August 2021), which are focused on carbon reduction and minimizing the environmental impact of organizations and have a pulling effect on their suppliers.

Responsible companies should assess the availability of socially responsible suppliers when sourcing. If few responsible suppliers are found, there will be a need to apply direct socially responsible supplier development practices (SRSD), including training or on-site consultation and problem identification analysis. On the other hand, if responsible suppliers are available, indirect SRSD such as self-regulation (e.g., sustainability requirements, codes of conduct) or different types of assessment (supplier evaluation, supplier selection and auditing) could be more cost effective.

6. Limitations and Future Research Directions

Although this study significantly contributes to the existing literature on socially responsible supplier development, it is subject to limitations that should be considered in interpreting its results. The findings are based on the information disclosed in the companies' sustainability reports, and the quality of the information provided in the report was not judged. The type of the record can influence the amount of information provided by the report. The reporting framework chosen by the company can also affect the content of the report as well as the perspective of the team responsible for developing the report, e.g., some aspects may be highlighted and some neglected or totally omitted. It should be mentioned that disclosing the information on any topic may not be consistent with the real effects. Sometimes the less disclosed practices are more beneficial. As 92% of the investigated reports were prepared in accordance with the GRI guidelines, we should point out that the reporting guidelines have also changed between 2010 and 2019 (new versions of the guidelines have been launched in 2013 and 2016). These changes might have influenced the reporting practices. Therefore, future research should be complemented with industry interviews.

Assuring sustainability in supply chains is still a current, crucial, and necessary topic that needs attention from researchers in order to help the industry tackle this issue. Thus, future research may try to answer the question regarding the types of sustainable supplier development practices that are the most beneficial for both suppliers and buyers at the same time. Thus, it would also be interesting to find out if suppliers assess the usefulness of the socially responsible supplier development practices the same as the producers. Future study may also analyze which practices of socially responsible supplier development engage the suppliers the most to practice sustainability along their supply chain.

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