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# The Implementation of Corporate Sustainability in the European Automotive Industry: An Analysis of Sustainability Reports

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**Abstract:** The acceptance of corporate sustainability implementation and sustainability reporting has continued to grow steadily in recent years. This is particularly true for companies in the automotive industry. Increasing regulatory demands, for example, with respect to CO<sub>2</sub> emissions, are one clear reason for this. In this paper the sustainability reports of 14 manufacturers in the European automotive industry are analyzed with respect to issues of corporate sustainability implementation. This entails content analysis of sustainability reports from 2012, and of their earliest available equivalents. The analysis of corporate sustainability implementation in the selected companies is provided with the purpose to help understand how manufacturers in the European automotive industry implement corporate sustainability. Results confirm the importance of specific policy instruments in implementation, such as the use of environmental management systems and standards, and of related changes in organizational structures. The latter include suitable adaptation of corporate strategy, philosophy, objectives, measures, and activities, as well as the need to integrate stakeholders in the adjustment process. The analysis shows that while companies are well-aware of the significance of sustainability for their industry, some tend to be leaders, and others laggards, as far as implementation is concerned.

**Keywords:** corporate sustainability; corporate sustainability implementation; sustainability reporting; content analysis; automotive industry

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## 1. Introduction

Much research in recent years has focused on the concept of corporate sustainability. Companies, society, and in particular, a growing number of consumers, are now more aware of what corporate sustainability is about. This is probably one major reason why more and more companies have begun to address ecological and social issues. Companies are faced with increasing regulation, intensifying stakeholder demands, and a highly dynamic market. The extent to which companies are committed to integrating corporate sustainability is often related to the potential benefits perceived in terms of cost reductions, efficiency gains, and improvements in market position, image, and company reputation [1,2].

The concept of corporate sustainability is defined as “meeting the needs of a firm’s direct and indirect stakeholders [...], without compromising its ability to meet the needs of future stakeholders as well” [3] (p. 13). According to Bansal [4] corporate sustainability is a combination of economic success, environmental protection and social responsibility. The implementation of corporate sustainability can support long-term business success as well as contribute to improving living standards. As Colsman [1] states, while companies do not specifically target forming a responsible society, this does not automatically mean that business and society may not profit from each other. Salzmann *et al.* [5] (p. 27) argue that the “business case is not a generic argument that corporate sustainability strategies are the right choice for all companies in all situations, but rather something that must be carefully honed to the specific circumstances of individual companies operating in unique positions within distinct industries”. Companies are increasingly opting for improvements to corporate sustainability since they are faced with growing sustainability demands from stakeholders. One mechanism to engage stakeholders is sustainability disclosure in the form of a sustainability report [6]. This has led to an increased use of sustainability indicators in company reporting. There is also greater awareness that material resources form an essential foundation for business success [7]. Apart from any existing intrinsic belief in the value of sustainability, several other factors exist which support the growing interest in sustainability implementation. These include the potential for cost reduction, the use of sustainability as a sales and marketing aid, and the potential for sustainability to generate a competitive advantage. It is important in the implementation process that companies continue to focus on their core strengths [1]. In other words, in order to ensure that corporate sustainability is successful, companies need to make the implementation process compatible with corporate strategy. Answering the question of how sustainability is to be implemented, is probably just as important as deciding whether to improve sustainability or not [8].

The challenges surrounding issues of sustainability and its implementation are strongly felt in the automotive industry. There is a clear need for company action, and at the same time, there is also wide recognition that sustainability offers considerable potential. Some stakeholders, such as political and social agents, are demanding cars that are more eco-friendly (e.g., reduced CO<sub>2</sub> emissions, alternative power trains and new mobility concepts) [9]. Other stakeholders, such as customers and employees, are demanding business behaviors and activities that are more sustainable (e.g., labor safety, salaries, cleaner production). With this background in mind, it is the purpose of the present article to give an overview of corporate sustainability implementation in the European automotive industry. The investigation offered adopts an external perspective and analyzes the sustainability reports of the selected companies with respect to their implementation of corporate sustainability. Theoretical basis

for this paper besides literature on corporate sustainability and reporting in general is stakeholder theory in order to explain integration of internal and external stakeholder and institutional theory regarding the formalization of sustainability activities. The research questions to be answered are as follows:

RQ 1: What topics related to corporate sustainability can be identified in the sustainability reports of the selected car manufacturers? Has there been any noticeable change in focus over time?

RQ 2: What information concerning corporate sustainability implementation procedures is contained in company sustainability reports?

The results of this article will be relevant to scientists and practitioners as it provides a summary of corporate sustainability implementation in the European automotive industry, based on information of sustainability reports. Furthermore the article contributes to enable greater ease of comparison across car manufacturers operating in Europe. The article is structured as follows. Section 2 provides an overview of the existing state of research. The focus here is first on issues relating to corporate sustainability implementation, followed by questions of sustainability reporting, specifically as related to the automotive industry. Section 3 contains a description of the research method employed, *i.e.*, of content analysis. The actual research questions are addressed in Section 4, together with the results gained for the European car manufacturers ( $n = 14$ ). The results obtained are derived on the basis of empirical data. Finally, Section 5 rounds off the paper by presenting relevant discussion and conclusions.

## 2. Literature Review

### 2.1. Corporate Sustainability Implementation

Today there are many concepts and tools for sustainability implementation [2] e.g., material and energy flow accounting, eco-audit & eco-management control, sustainability reporting, BUIS (operating environmental management information systems) or environmental management systems such as EMAS (eco management and audit scheme) and ISO 14001 (environmental management standards). Generally, it can be seen that there “is a growing incentive to firms to consider the environmental costs of their activities if, for example, the direction of policy at both the national and the European level continues to develop in line with the ‘polluter pays principle’” [10] (p. 13). While the intention is not to replace existing accounting practices [10], “in most cases, sustainability accounting is just used as another term for environmental accounting or environmental reporting” [11] (p. 375). Implementing corporate sustainability in a balanced fashion requires its introduction at all business levels (normative, strategic, and operative) and in all business processes in such a way that complexity is reduced, and changes are effective, efficient, and comprehensible [12]. This also enables target-oriented planning and realization, and concurrently provides the basis for reporting [13]. Moreover, “this way, a firm is able to benchmark its own performance vis-à-vis the average or individual firms” [10] (p. 4). In this context, Herzig & Schaltegger [14] (p. 152) note that “sustainability reporting can play a key role in creating transparency about responsibilities and accountability for activities and performance benchmarking”.

The advantages and opportunities provided by such integrative and strategic sustainability management include the potential for opening new markets, improving competitive position, generating

greater consumer and shareholder acceptance, enhancing company image, improving employee motivation, and cost reduction [2,13,15]. As the analysis and management of economic, environmental, and social impacts are core company functions, improved sustainability means that the company has a positive impact on its environment and on society [2,13]. What is more, as Atkinson *et al.* [10] argue, “Corporate entities are increasingly under pressure to demonstrate how they contribute to the national sustainability goals outlined by government”. The implementation of corporate sustainability is a holistic, systematic, and result-oriented approach with the aim of proactively boosting implementation of the adapted mission statement, promulgating continuous improvement, and creating a learning organization [13].

There are some key elements of implementation. According to Rabbe and Schulz [13] these key elements are sustainability policy, sustainability goals and activities, sustainability measurement, sustainability communication, and future-oriented actions. Colsman [1] gives step by step instructions for companies on which success factors need to be managed during the implementation of a corporate sustainability program. In his analysis, Colsman [1] relies on experience gained and discussions undertaken with relevant companies, and on the findings of the consultancy firm PWC (Price Waterhouse Coopers). The success factors identified are: individual definition of corporate sustainability; anchoring within the company (impulse from top to bottom and involvement of employees); identification and analysis of relevant corporate sustainability drivers; offensive market-oriented corporate sustainability strategy (a company should only have one central business strategy in which corporate sustainability is integrated); consideration of potential and relevant corporate sustainability topics; full integration into the core business; integrative methods integration in the central information systems; inclusion of the finance department, measurement instruments, communication (reporting); inclusion of all business segments (as previously indicated); involvement of key stakeholders as partners; and finally, measurement and management of causes and effects.

## 2.2. Sustainability Reporting

Corporate communication in general is essential for successful business management and communication with respect to issues surrounding sustainability is one key element of corporate sustainability implementation [13]. Sustainability reporting is defined by Gray *et al.* [16] (p. 3) as “the process of communicating the social and environmental effects of organizations’ economic actions to particular interest groups within society and to society at large”. At the same time, as Brown *et al.* [17] (p. 574) state, “sustainability reporting and sustainability management build on a similar philosophy, strategy, skills and resources”. Hence, it is necessary to adapt the internal and external communication measures, particularly as studies show that stakeholders are becoming increasingly interested in corporate sustainability information. According to stakeholder and institutional theory, different industries may have different stakeholders [18,19]. This may affect the way companies are reporting on their sustainability activities and performances. “For companies in different industry, their external pressures can lead to different processes for determining which activities to engage in and how much to invest. In other words, based on different institutional needs, the companies in different industries can decide whether they want to and how they want to invest in reporting their sustainable work” [20] (p. 3). In general, Hoffhaus [21] states that the most important stakeholders are: NGOs, consumers,

employees, political representatives, and the media. In this context companies face various challenges, e.g., the inherent complexity and/or incomprehensibility with respect to issues of corporate sustainability, the high potential for conflict with respect to internal and external objectives on the part of the stakeholders, the difficulties of arranging collaboration across all business divisions, the perceived legitimacy of sustainability as costs are incurred, and finally, problems in collecting and preparing information relevant to corporate sustainability [14,22]. In order to deal with these issues adequately, it is important that “transparency”, “completeness”, “truth & clarity”, “substantiality”, and “continuity & comparability” are all made essential components of the communication and reporting process [23].

There are various reasons for companies to report on corporate sustainability activities and/or for them to publish a sustainability report. One major reason is simply to provide necessary information to external stakeholders. Another reason is to generate a suitable database for the management and control of corporate sustainability policy. Kolk [24] states that there are increasing demands for transparency and accountability, and that “CEO statements refer to the importance of corporate governance, transparency and honesty, and boards are said to pay much attention to, and feel responsibility for sustainability, frequently in relation to corporate governance, risk management and reputation issues” (p. 7). The Global Reporting Initiative (GRI)—“the best-known framework for voluntary reporting of environmental and social performance by business and other organizations worldwide” [17] (p. 571)—lists several reasons why companies may report on sustainability. These are: (1) achieving a better understanding of business risks and opportunities; (2) improvement of reputation and brand loyalty; (3) the empowerment of stakeholders to help them understand corporate sustainability impacts and performance; (4) assessing the connection between financial and non-financial performance; (5) influencing long-term management strategies, policies, and business plans; (6) the creation of benchmarks and evaluation measures for sustainability performance; and (7) the need for benchmarking within the company and between organizations [25]. Moreover, “sustainability reporting is typically a way in which companies try to address a multitude of audiences” [24] (p. 13). In view of sustainability reporting and the companies’ orientation towards the GRI guidelines, Hedberg&Malmborg [26] (p. 153) aptly hold that it “could help corporations to learn about themselves and to see what has actually been done in the organization”. Some of those companies which already report on corporate sustainability indicate that it actually provides economic advantages in the form of new market opportunities, better stakeholder relationships (internal and external), and improved assessment of business risks and costs [27]. In addition, in 2013, a German survey of environmental experts by the Cologne Institute for Economic Research showed that the majority of businesses publish a sustainability report mainly with a view towards improving their reputation and image [28]. Herzig&Schaltegger [14] also found that motives underlying sustainability policies are often related to concerns regarding company reputation and risk management. In this context Kolk [24] (p. 12) states that it “is also important to consider the level of detail in which information will need to be given because of the fact that such forms of reporting are voluntary to some extent, but, at the same time, not really in view of disclosure requirements on risk and control management [...] brand and reputation issues, and ethical dimensions of remuneration and auditing”.

More and more companies are trying to act sustainably and hence are beginning to implement corporate sustainability and to encourage adequate sustainability reporting. While one aim is to measure the performance and development of own corporate sustainability measures, a further factor is

the wish to demonstrate company leadership via sustainability reporting. Thus, sustainability reports are often perceived as being important complements to the company annual report [25,29]. Here it should be noted that transparency and authenticity are decisive in this context. A sustainability report should not merely be seen as a public relations instrument. It is rather a tool for helping companies discover the interdependencies existing across various dimensions and to make them become more aware of their strengths and weaknesses [30]. “Seen as a learning rather than an adaptive process, sustainability reporting may also initiate processes to enhance employees and manager awareness and motivation, and lead to individual and organizational changes that foster organizational performance” [14] (p. 153).

### *2.3. Corporate Sustainability Implementation and Sustainability Reporting in the European Automotive Industry*

Car manufacturers are profit-oriented companies and thus the ultimate corporate goals are long-term viability and a strong competitive position [31]. However, according to Brunner [8], car manufacturers still recognize the importance of corporate sustainability implementation in practice. Corporate sustainability is taken into account when defining business objectives, particularly with respect to issues relating to stakeholder demands and the environment.

In this context new challenges are emerging for the automotive industry in general, and for OEMs in particular. Competitive pressure continues to intensify as low cost manufacturers all over the world pick up speed and threaten to undermine European leadership in several areas and to threaten Europe’s export position. Increasing pressure in several market niches in the automotive industry is clearly noticeable [32,33]. Apart from price and cost pressure, the question of future resource availability is also becoming a major concern [33,34]. In addition, stakeholder requirements, especially those of consumers and political representatives, are also undergoing rapid change. Here environmental acceptability, cleaner technologies, and new forms of mobility play a key role. Moreover, the motives behind consumer purchases are becoming less emotional and more functional. It is expected that by the next decade a new form of mobility will become dominant in Europe, North America, and Japan, one where environmental awareness and quality of life determine modal choice. In addition, as the International Energy Agency (IEA) stated in 2010, the transport sector causes approximately 22 percent of global, and almost one-fifth of European greenhouse gas emissions [35]. Current EU regulations now require that all OEMs reduce CO<sub>2</sub> emissions for their newly registered fleets to an average of 130 g/km [34–36]. Where these values are exceeded, penalties may be imposed. The limits for the 2020 targets are 95 gCO<sub>2</sub>/km (Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 [35]).

The automotive industry faces the following challenges: intensifying competition, more discerning customers, increasing importance of corporate sustainability and corporate social responsibility (CSR), rising costs of raw materials, tighter regulations (e.g., concerning CO<sub>2</sub> emissions), calls for stronger cooperation with stakeholders outside the industry (“networking”), greenwashing, and maintaining reputation. As these challenges show, corporate sustainability plays an important role in the automotive industry today. The OEMs are attempting to optimize existing power trains, develop innovative driving technologies and new distribution models, as well as to build an efficient global structure and network [34,37,38]. Almost every OEM has its own “green” product line and advertises “low fuel

consumption” or “low CO<sub>2</sub> emissions”. Besides such flagship products, the environmental quality of most other product lines very often remains untouched, *i.e.*, there may be no improvement. The unprofessional approach to corporate sustainability taken by many companies is also evidence of so called “greenwashing”, e.g., the use of advertising where cars are constantly driven through a green landscape [21].

### 3. Methods

The present study analyzed the content of sustainability reports in order to explore how the European OEMs integrate corporate sustainability within their companies and what typical issues they have to deal with. This study focuses on the implementation of corporate sustainability. It thus concentrates on the analysis of sustainability reports from 2012 for a sample of 14 European OEMs (Section 3.1). Content analysis as proposed by Mayring [39] provided the foundation for the approach used. The software program MaxQDA was employed to deal with the extensive data set. According to Klettner *et al.* [40] (p. 152) “content analysis is commonly used in corporate responsibility research (...)”. Abbott and Monsen [41] (p. 504) defined content analysis as “a technique for gathering data that consists of codifying qualitative information in anecdotal and literary form into categories to derive quantitative scales of varying levels of complexity”.

#### 3.1. Sample of Companies Selected for Analysis

The sample of companies selected for analysis is focused on European automotive manufacturers operating in Europe (Table 1). Only OEMs, and not suppliers, were considered. All of the selected manufacturers already accept responsibility for society and the environment in several areas, and already report on their corporate sustainability to some extent. The manufacturers analyzed are listed in rankings such as oekom research, ASPI, Sustainalytics, Carbon Disclosure Project (CDP), and some of them occupy leading positions in ratings such as the Dow Jones Sustainability Index (DJSI). The companies selected for sustainability disclosure assessment in the European automotive industry comprise the main car manufacturers in Europe ( $n = 14$ , Table 1). These companies were selected based on their importance in the European automotive industry. Eight of the sample companies were listed among the world’s 100 biggest public companies in 2014 [42]. In comparison to other studies, the present paper considers all OEMs producing in Europe, including non-European automotive OEMs (e.g., Ford, General Motors, Honda Motor, Hyundai Motor, Toyota Motors). According to Mosene *et al.* [43] (p. 201) “the main document normally used to communicate social and environmental performance information with stakeholders is the sustainability report”. To assess sustainability reporting in the sample companies, and to identify topics of relevance, reports published in 2012 were taken into account. In this analysis, electronic reports were analyzed rather than hard copies. One reason for the preference of electronic reports is the common claim that in the 21st century, website sustainability reports provide the main channel for company external communication with respect to corporate sustainability [43,44]. The company websites were thus screened and sustainability reports published in 2012 form the database for the analysis which started in 2013. Besides the sustainability reports of 2012, the earliest available reports from the sample companies were also identified and analyzed in order to reveal changes over the time.

**Table 1.** An overview of the selected car manufacturers and sustainability reporting information.

Car Manufacturer	Start of Environmental/Sustainability Reporting	First Published Sustainability Report	Further Sustainability Publications
Audi	Environmental Report 2005	2012	Environmental Report Environmental Statement Dialogue/The Encounter— The Audi Environmental Magazine
BMW	Environmental Report 1997	2001/2002	—
Daimler	Sustainability Profile 2005 (Daimler AG)	2008 (Daimler AG)	Environmental Statement 360 Degrees—Magazine on Sustainability
Fiat	No search result	2004	—
GM (incl. Opel)	Opel CSR Report 2002	2010	—
Honda Motor	Environmental Report 2001	2006	Environmental Report European Environmental Report Honda Ecology Honda Philanthropy
Hyundai Motor	No search result	2002/2003	Global social contribution activities White Paper
Jaguar Land Rover	No search result	2009/2010	—
Nissan	Environmental Report 1998	2004	Environmental Report
Renault	No search result	2012	CSR Newsletter
Škoda	No search result	Own sustainability Report 2007/2008	(Integration in the VW group)
Toyota Motor	Environmental Report 1998, European Environmental Report 2001	2006	Environmental Report European Environmental Report
Volvo Car	No search result	2003	Corporate Report with Sustainability Environmental Data Report Environmental Report (Volvo Car Gent)
VW	Environmental Report 1995	2005/2006	Environmental Report Environmental Statement

### 3.2. Content Analysis

The results of this study are based on content analysis. “The most important part of designing a process of content analysis is in deciding upon the coding categories” [40] (p. 152). This process was done as follows. Generally, the development and structuring of the coding categories, and thus of the results, is based on the main research questions (RQ1 and RQ2) and the related sub-questions presented in Table 2. The development of these (sub-) categories is based on the literature review about corporate sustainability in the automotive industry (Section 2.3) and the experience from the research team, which is for years active in corporate sustainability research including the automotive industry.

RQ1 addresses the key sustainability topics. In this context, each company’s perspective on corporate sustainability needs to be identified in order to assess potential changes over the time. Concerning the development and the presentation of the results with regard to implementation (RQ2) it is important to note that the analysis was designed to reflect fundamental elements and success factors [12,41]. The following



more detailed questions and aspects were also used to help generate a clear structure. Table 2 shows the connection between the study sub-questions and relevant aspects (additional codes for content analysis).

**Table 2.** Sub-questions of RQ2 and relevant aspects.

Sub-Questions for RQ2	Relevant Aspects (Additional Codes for Content Analysis)
Where and how is corporate sustainability embedded in the examined companies?	Incorporation: (a) management, (b) instruments, (c) management control, (d) stakeholder, (e) production & product
Did the examined OEMs specifically formulate corporate sustainability strategies?	Corporate sustainability strategy Applied instruments
Does the analysis identify corporate sustainability strategies and applied instruments?	Corporate sustainability strategy Applied instruments
What understanding of corporate sustainability do the examined OEMs have?	Corporate philosophy in terms of corporate sustainability Corporate sustainability statements
What vision do the examined companies pursue in terms of corporate sustainability?	Corporate vision & perspectives on corporate sustainability Corporate sustainability targets

The development of the analysis criteria resulted from three approaches. In the first step, the existing literature in this field and the research questions formed the basis for filtering out the central characteristics and categories. This was followed by a process of brainstorming, in order to gather numerous relevant ideas and to preserve the external perspective of the study. Subsequent to the above, the reports of the selected car manufacturers were then used to obtain a final, balanced set of criteria. This ensured that the different terminology employed in various company reports did not lead to important information being overlooked. Finally, the collected criteria were transferred into a mind-map program (FreeMind) in order to structure key areas and to guarantee clarity. Since the set of criteria obtained was very large in the first very general round, only the relevant criteria were picked out. This means relevant criteria with respect to the research questions and therefore to the aim of the study, but also to the criteria which provide demonstrable and comparable findings.

The final criteria selected were divided into six main and 139 sub-criteria and are consistent with the codes for MaxQDA (Table 3). The main criteria are: (1) sustainability topics (structured into general, ecological, social, and economic topics); (2) implementation; (3) stakeholder management; (4) management control; (5) product; and (6) other criteria.

Most of the criteria and/or codes serve as search criteria for the lexical search and automatic coding in MaxQDA. The sub-criteria were specified more precisely by so-called “criteria details”. These are further search criteria for MaxQDA but not own codes. It is important to note here that the final selection is still highly detailed and thus it already includes the “anchor examples” or “coding rules”, as described by Mayring [39,45]. Moreover, this also ensured that output was both comprehensive and targeted.

Two methodological limitations must be taken into account when evaluating the findings. First, the analysis relies on information published by the companies themselves. This means there may be definitions, structures, or processes which companies have chosen not to comment upon in their formal sustainability reports. In other words, there is plenty of room for bias. This is where the external perspective, a central element in this study, becomes important. For the purpose of the study the companies were assessed in terms how they communicate what they are doing rather than what may be happening internally in practice. A further potential limitation is that the present authors might have

missed capturing information which was relevant. However, as the authors are experienced in reviewing literature and in conducting content analysis, this is unlikely to be significant. The coding scheme for the selected criteria was first drawn up by two researchers individually, and then subsequently combined, in order to reduce the impact of individual bias.

**Table 3.** Summary of criteria selection.

Main Criteria	Sub-Criteria
<b>Sustainability topics</b> Topics related to sustainability and structured in general, ecological, social, and economic topics	<b>General:</b> Activities, Initiatives, Projects/Awareness/Award/Road Safety <b>Ecological:</b> Environment: Environmental impact, Environmental aspect/Conservation/Climate Change & Global Warming/Environmental issues/Footprint/Biodiversity/Protection/Emission: CO <sub>2</sub> emissions, Traffic noise, Greenhouse gas emissions/Resources: Resource consumption, Conflict minerals, Material, Water & Air quality, Waste/Recycling <b>Social:</b> Well-being/Commitment/Human rights/Integrity/Tolerance & Respect/Equality/Development: Education & Training/Society: Corporate Citizenship, Social impact, Community/Working conditions: Corruption & Discrimination, Work environment, Work hours, Work-life balance/Occupational health and safety: Social insurance/Employee: Retirement, Labor union, Benefit, Remuneration & Wage & Salary, Personnel & People, Women <b>Economic:</b> Cost saving/Sustainable growth/Localization/Green logistics/Demographic change/Economic prosperity/Viability/Sustainable success
<b>Implementation</b> Categories that give information about the implementation of corporate sustainability	<b>Integration:</b> Management, Work group, Department, Organization, Team, Committee/Emissions trading/Guideline/Governance/Approach/Strategy/Culture: Value, Code of Conduct, Philosophy, Responsibility/Sustainability tools: ISO 14001 & EMAS, UN Global Compact, Standards, Environmental management/Policy: Vision, Statement, Mission, Goal & Target
<b>Stakeholder management</b> Categories that give information about stakeholder and the involvement of stakeholder	Competition/Involvement/Requirement/Relation/Interaction & Engagement/Communication: Stakeholder dialogue/Supply chain: Sustainability criteria
<b>Management control</b> Categories that give information about the evaluation of targets and performance measurement	Key facts & Figures & Data/Assessment: GRI, Life cycle assessment, Ranking & Rating & Index/Information/CSR checklist/Accounting/Profitability/IT: ERP/Monitoring/Risk management/Audit/Scorecard/Analysis: Materiality Analysis/Indicators: Key Performance indicators/Performance: Sustainability performance/Report
<b>Product</b> Categories that give information about the sustainability aspects of the product	Life Cycle/Energy: Battery/Product safety/Product responsibility/Production/Technology/Mobility: Electric car & Vehicle, Mobility services/Fuel: Fuel consumption
<b>Other indicators</b> Important categories that cannot be classified within the other categories	Corporate Social Responsibility/Corporate Sustainability/Corporate Responsibility/Challenges of sustainability/Chance/Facility/Confidence/Reputation

## 4. Results

Based on the research questions and the coding scheme this study provides a concise reflection of the present state of sustainability topics, essential for implementation, in each of the 14 OEMs examined. Moreover, this section offers an overview (Appendix) of the central results and therefore also provides the possibility to compare the automobile manufacturers with each other.

### 4.1. Sustainability Topics

As seen by RQ1 and RQ2, the aim of the study was to identify the specific sustainability topics of relevance to the manufacturers. However, to obtain answers to the research questions the examination concentrated on the 22 “Sustainability Issues” sub-criteria (Section 3.2). This is done by comparing the sustainability reports from 2012 and their earliest available equivalents. Such a comparison was only possible for 12 companies as two of the companies, Audi and Renault, had published their first sustainability report in 2012. Examining the 2012 reports on the basis of the criteria it appears that only three of the 14 companies—Audi, BMW and Škoda—take all criteria into account. Table 4 reveals the criteria which were not addressed by the manufacturers.

**Table 4.** “Sustainability Issues” not addressed in the sustainability reports.

Company	2012 Report	Earliest Equivalent Report
Audi	All addressed	First 2012
BMW	All addressed	Road safety, green logistics
Daimler	Sustainable growth & viability	Awareness, environmental impact, sustainable growth & viability
Fiat	Sustainable success	Climate change & biodiversity, work-life balance & work hours, green logistics
GM	Remuneration/benefits & retirement, green logistics	Remuneration/benefits & retirement (in parts: retirement mentioned), sustainable growth & viability
Honda Motor	Economic dimension	Remuneration/benefits & retirement (in parts: retirement mentioned), women, economic dimension
Hyundai Motor	Labor union, cost savings, green logistics	Labor union, sustainable success
Jaguar Land Rover	Cost savings, sustainable growth & viability, Sustainable success	Road safety, sustainable success
Nissan Motor	Sustainable success	Labor union, sustainable success
Renault	Protection & conservation, work-life balance & work hours, occupational health and safety & insurance, remuneration/benefits & retirement (in part: retirement mentioned), cost savings, sustainable growth & viability, green logistics	First 2012
ŠkodaAuto	All addressed	Road safety, economic dimension
Toyota Motor	Work-life balance & work hours, labor union, remuneration/benefits & retirement	Work-life balance, labor union, remuneration/benefits & retirement, women, cost savings, sustainable success

Table 4. Cont.

Company		2012 Report	Earliest Equivalent Report
Volvo Car	Work-life balance & work hours		Environmental impact, protection & conservation, resource consumption + waste/water/air, work-life balance & work hours, remuneration/benefits & retirement, cost savings, sustainable growth
VW	Cost savings		Green logistics, sustainable growth

A comparison of company reports shows that, with respect to the criteria, there has been a change over time for all OEMs. Differences become evident concerning the sustainability topics addressed, in terms of both the intensity with which they are pursued, and in terms of their specific content. More precisely, one may distinguish between (1) no change; (2) marginal change; (3) moderate change and (4) extensive change. (1) means that no change is identifiable; (2) says that only one or a few topics differ; (3) indicates that several topics differed in terms of whether they were addressed and their intensity; (4) indicates that the comparison shows that 50% or more of the topics differ. Finally, the analysis also provides the answer to RQ2 Of the companies (10 of 12 OEMs: BMW, Daimler, Fiat, GM, Honda, Hyundai, Jaguar Land Rover, Nissan, Toyota VW), 83% show a marginal change over time, and for 17% (2 of 12 OEMs: Skoda and Volvo) there has been a moderate change.

#### 4.2. Implementation of Corporate Sustainability within the Company

This part of the paper addresses RQ2, including the sub-questions, and therefore also the main focus of the study. For this reason, and to aid “traceability”, the following presentation of the results is based on the sub-questions. As explained in Section 3.2 the content analysis is based on the coding scheme, *i.e.*, on the main criteria “implementation”, “stakeholder management”, “management control”, “product”, and “other criteria”. In addition, the results represent the external perspective concerning the implementation of corporate sustainability within the companies. The analysis reveals that all 14 OEMs have already made some changes in their organizational structures.

##### 4.2.1. Where and how is Corporate Sustainability Embedded in the Companies Examined?

Specifically, the study clearly shows that 13 OEMs (all but Honda) have already implemented an environmental management system. In addition, seven companies have established their own sustainability management. These OEMs are: Audi, BMW, Daimler, Fiat, Hyundai, Toyota, and VW). Moreover, all 14 OEMs have launched extra steering committees and/or sustainability/CSR teams and/or sustainability/CSR departments. In addition, the analysis points out, that 12 companies regularly conduct life-cycle assessments (Honda and Škoda do not) and that 12 also carry out risk assessment (Hyundai and Jaguar Land Rover do not). It turns out that five OEMs have implemented special sustainability-based scorecards. These include a sustainability scorecard (Daimler), a balanced scorecard covering aspects of sustainability (BMW), an environmental innovation scorecard (Jaguar Land Rover), a CSR scorecard (Nissan), and a supplier scorecard, aimed at creating a more sustainable supply chain (VW). With respect to stakeholder management the study makes clear that 13 companies (all but Renault) rely on active dialogue with their key stakeholders. And in particular, with regard to

the core business (product) it can be seen that all 14 OEMs already take some measures regarding corporate sustainability. Such measures include the use of more efficient technologies (resulting in lower fuel consumption or fewer CO<sub>2</sub> emissions), new types of car (e.g., electric vehicles, hybrid vehicles), or policies designed to improve safety performance. 12 OEMs focus on making the production process itself more sustainable, for example, by improving production technology, making greater use of renewable resources, or attempting to reduce negative environmental impact (all companies apart from Honda and Renault).

#### 4.2.2. Did the Examined OEMs Specifically Formulate Corporate Sustainability Strategies?

Concerning the next sub-question, the study identifies that 57% (8 of 14 OEMs: Audi, BMW, Daimler, Fiat, GM, Hyundai, Jaguar Land Rover, and Volvo) have already formulated specific corporate sustainability strategies with a direct and clear reference to corporate sustainability, or to clearly pertinent content.

#### 4.2.3. Does the Analysis Identify Corporate Sustainability Strategies and Applied Instruments?

Drawing on the previous sub-question this one concentrates on whether the OEMs—even non-explicitly—formulated their corporate sustainability strategies indirectly. In other words, were aspects of corporate sustainability or CSR simply added to an existing general business strategy. The study reveals that besides the eight OEMs which have an explicit corporate sustainability strategy, five OEMs have such an indirect strategy. These companies are Nissan, Renault, Škoda, Toyota, and VW, although it is not completely clear with respect to Toyota, whether the strategy is explicit or indirect. In this respect, the Honda report could not be used to identify any strategies concerning corporate sustainability one way or the other. With respect to the second part of the sub-question, the analysis revealed the presence of a few instruments relating to the implementation of corporate sustainability (both mandatory and voluntary). Besides the well-known standards EMAS and ISO 14001 these are: ISO 14040, ISO 14044, ISO/TR 14062, ISO 14064-3, ISO 26000, ISO 50001, GRI Guidelines, UN Global Compact Guidelines, AA1000APS, Anfor AFAQ 26000.

#### 4.2.4. What Understanding of Corporate Sustainability do the Examined OEMs have?

Another interesting but also elusive question is whether the reports provide useful information concerning OEM understanding of corporate sustainability. Based on the theoretical background the analysis focused on the two aspects “corporate philosophy in terms of sustainability” and “sustainability statements” as mentioned in Section 3.2. As it is difficult to make a clear and objective statement the analysis concentrated on checking for the content and existence of such a philosophy. This was done by breaking down the sub-question into three areas: (1) sustainability as integral element; (2) sustainability serves more as a tool (concerning the company’s success and continuance) and (3) sustainability is on the way to becoming an integral element. The study shows that 71% of the companies examined (10 out of 14 OEMs) regard sustainability as an integral element of their business. These are: BMW, Fiat, Honda, Hyundai, Nissan, Renault, Škoda, Toyota, Volvo, and VW. Further, three OEMs regard corporate sustainability as being more of a tool (Audi,

Daimler, and GM), and one OEM (Jaguar Land Rover) may be classified as belonging to area (3). For the vast majority of companies examined, corporate sustainability is perceived as being more than just a tool. It seems safe to assert that corporate sustainability is well on the way to becoming an integral element in strategy in the automotive industry.

#### 4.2.5. What Vision do the Examined Companies Pursue in terms of Corporate Sustainability?

The study identifies four directions with respect to the formulation of company vision. These comprise (1) the intention to contribute to sustainable mobility and therefore to a more sustainable society (focus: sustainable mobility & society); (2) the desire to raise the pleasure of mobility for individual customers (focus: customers and their satisfaction); (3) the protection and expansion of market position, and the wish to be known/recognized as a leading manufacturer and partner in innovative and eco-friendly technologies (focus: market position and image); (4) the absence of clear overall statements, and a focus on minor changes concerning technology and efficiency issues, as well as on social engagement (focus: necessary improvements in order to remain competitive). The study also reveals that there appear to be two fields of attention: (1) concentration on efficiency improvements in production and product with a view towards achieving CO<sub>2</sub>-neutral mobility; and (2) the development of new technologies such as hybridization and electrification. The analysis further looks at whether the 14 OEMs have formulated specific visions in terms of corporate sustainability. The same differentiation is used here as in (iii) above; “direct”, “indirect”, and “no” formulation of a corporate sustainability vision. The study reveals that 57% (8 of 14 OEMs) have already formulated a specific “vision” with a direct and clear reference to sustainability (BMW, GM, Honda, Hyundai, Jaguar Land Rover, Renault, Toyota, and VW). It is not completely clear whether BMW’s strategy is explicit, or only indirect. Furthermore, about 21% of the companies (3 of 14 OEMs: Audi, Nissan, and Volvo) have formulated a vision with an indirect link to corporate sustainability, meaning that their vision covers only some aspects of corporate sustainability. Finally, the OEMs Daimler, Fiat, and Škoda did not provide the relevant information and therefore the study was not able to identify any sustainability vision from an external perspective.

## 5. Conclusions

The present study was designed to investigate the implementation of corporate sustainability in the European automotive industry on the basis of information extracted from company sustainability reports. Each of the 14 companies in the present study reports on corporate sustainability, its sustainability measures, and what it has achieved with respect to sustainability activities. This is also in accordance with the GRI guidelines. All companies analyzed report on their short-term and middle-term goals and some also explicitly provide concise information concerning present goal attainment, in particular Audi, Daimler, Fiat, Jaguar Land Rover, Nissan, Toyota, and VW. With respect to Toyota, it is the only non-European company which publishes its own European sustainability report. Generally, it can be seen that all manufacturers analyzed regularly publish a new report. More precisely, this means that VW, Volvo, Toyota, Škoda, Renault, Nissan, Jaguar Land Rover, Hyundai, Honda, GM, Fiat, Daimler, and BMW report annually and Audi biennially. Audi and Renault published their first sustainability report in 2012.

Regarding the implementation of corporate sustainability, the analysis reveals that the manufacturers know about the future potential for their industry sector and confirms the importance of specific policy instruments, e.g., of management systems such as EMAS, and of ISO 14001. In addition, necessary changes in organizational structures have been undertaken, at most companies, including the adaptation of strategy, goals, and philosophy, and the use of appropriate measures in management control and communications, as well as stakeholder management and integration. This means that the manufacturers have already started to integrate corporate sustainability into their core businesses and some have well-formulated corporate sustainability strategies. The study reveals that seven of the analyzed companies established their own sustainability management and all companies have launched some form of extra steering committees and/or sustainability/CSR teams and/or sustainability/CSR departments. This is in line with Brammer *et al.* [46], who see the diffusion of sustainability/CSR departments as an indication for an increasing institutionalization of corporate sustainability.

Regarding sustainability strategies the results show that about half of the companies with a clearly defined sustainability strategy already seem to have strategies which are more outward-directed and more active. Considering the whole sample, about one-third appear to be more outward-directed and proactive. The rest appear to have designed their sustainability strategies as part of a more defensive reaction. This is particularly true for those companies with indirect sustainability strategies. Moreover, the present study reveals that the majority of the sample—those which have a clear or indirect strategy—have their own corporate sustainability strategy and, in many cases, more than one.

In view of sustainability topics, energy consumption, education, emissions, waste, as well as freedom of association and biodiversity are mentioned by most of the companies. Besides this it can also be seen that companies primarily address those topics that are of economic relevance. In addition, the present study shows that companies in the European automotive industry are aware of the significance of corporate sustainability activities, especially for their industry sector. This is also confirmed by Chen *et al.* [20], who see the adoption of sustainability activities as an essential issue for the automotive industry but also comment on the need that activities may differ based on their institutional needs in different industries.

The present study also reveals that the implementation of corporate sustainability is slowly moving beyond specific measures relating solely to the core business. Separate sustainable vehicle lines and concepts exist in addition to the more standard lines of production. Overall, there is a tendency to increased and intensive product sustainability.

Besides this shift the results show that communication, management control, and logistics are becoming increasingly important in sustainability implementation amongst the car manufacturers analyzed. Beyond that, it appears that the most common methods implemented relate to environmental and quality management systems as well as to the use of sustainability reports and environmental indicators to measure environmental performance. In view of integrative methods it is to say that there are some tentative attempts but they are rather hard to identify. Moreover, the study shows some main drivers and their importance for corporate sustainability implementation. These drivers are: reputation, efficiency, costs, risk control, (employee) motivation, innovation, and turnover. The present investigation showed that the companies realize the importance of stakeholder management *i.e.*, involving their stakeholders and maintaining relationships. Several companies reported that they

already involved their key stakeholders on a regular basis. This supports Freeman's [47] strategic view on stakeholder theory that stakeholder involvement can provide benefits to companies. Besides such drivers the present study found that regarding the measurement and its assessment aspects like "energy and water use", "emissions", "waste", "material consumption" belong to the most commonly measured aspects amongst all OEMs. It also shows that there is a tendency in some companies to initiate systematic analysis of sustainability measures and their impact on corporate success.

The findings of this study are very close to the findings of Colman [1]. He showed, in his study, how sustainability management may be implemented in practice on the basis of nine factors: (1) drivers for sustainability; (2) sustainability strategies; (3) sustainability issues; (4) integration into the core business; (5) organizational areas concerned; (6) drivers for a sustainable business scenario; (7) involvement of the stakeholders; (8) management methods for sustainability management; and (9) measurement and assessment. In accordance with these factors the findings of the present study differ slightly in some points regarding the factors (3)–(6) and (9). In comparison to Colman [1], the present analysis focuses solely on the external perspective regarding corporate sustainability effort and implementation. Some divergence between what companies communicate concerning corporate sustainability implementation and the true nature of implementation practice may exist. Therefore, further explorative research is needed, particularly with respect to European automotive production, in order to investigate the extent of this divergence in more detail. As stated above, the present study adopts an external perspective. Future studies could investigate corporate sustainability implementation from an internal perspective (e.g., case study research). As this study focuses on the automotive sector, the results described here cannot readily be applied to other industries. Further studies on different sectors would deepen overall knowledge in this field. In addition, based on the discussion above, it seems that companies in the European automotive industry want their sustainability activities transparent and reported. However, there is still little knowledge on the role and impacts of sustainability reporting and implementation of stakeholders and vice versa. Therefore, research should focus, besides the explorative investigation of the implementation of corporate sustainability, on analyzing this link in more depth.

At first glance, it might appear that the procedure and form of analysis chosen for the study made it difficult to get the information needed to sustain the required external perspective and to provide a database sufficient for a cross-company comparison of corporate sustainability implementation. However, as it turned out, the focus chosen, *i.e.*, selecting several reports for one industry, had a clear positive effect. Overall, considering the scope of the study, the standard of the results is quite high. Although specific details of company sustainability may have been overlooked, the overall goal of attaining improved comparability across company sustainability programs was achieved.

The results show that the car manufacturers analyzed do assume responsibility for corporate sustainability issues and that they actively implement measurements to monitor their sustainability activities. While the analysis of sustainability reports was not sufficient for identifying background motives to OEMs corporate sustainability activities, it did show that most manufacturers had adapted various organizational structures in order to improve their sustainability. While business needs would appear to dictate that certain steps be made towards improving automotive sustainability, it is clear that we still know very little about the implementation process itself. In view of the prevailing competitive pressures and the risk to their own survival, it is important for the OEMs that the whole industry,



particularly those engaged in manufacturing, concern itself more intensely with issues of corporate sustainability and with related issues of improved technologies, both within and beyond corporate borders. That this is just as important for society in general goes without saying.

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### **Author Contributions**

All authors contributed to the writing of this article. Martina Sukitsch conducted the analysis.

### **Conflicts of Interest**

The authors declare no conflict of interest.

## Appendix

Table A1. Summary of the results.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
Audi	Mentioned indirectly	Explicitly stated	Sustainability serves more as a tool	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , sustainability management, key figures, LCA, risk analysis, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Scorecard ↯ Increasing structural integration: in the core area “product”	<input checked="" type="checkbox"/> Change over time <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↯ Awareness raising for sustainability internal focus ↯ Social/cultural dimension internal and external, many measures for employees, society and environment ↯ Ecological dimension importance is clear, diverse measures ↯ Economic dimension importance is clear, initial approaches
BMW	Mentioned indirectly and explicitly (but this not clear-cut)—rather explicitly	Explicitly stated	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , sustainability management, key figures, LCA, risk analysis, scorecard, stakeholder dialogue, production, product ↯ Increasing structural integration: in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↯ Awareness raising for sustainability internal and external, important ↯ Social/cultural dimension internal and external, many measures for employees, society and environment ↯ Ecological dimension importance is clear, diverse measures ↯ Economic dimension importance is clear, first approaches

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
Daimler	Not mentioned	Explicitly stated	Sustainability serves more as a tool	<input checked="" type="checkbox"/> implemented: EMS, departments/teams etc., sustainability management, key figures, LCA, risk analysis, scorecard, stakeholder dialogue, production, product	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↳ Awareness raising for sustainability internal focus
				↳ Increasing structural integration: in the core area “product”	↳ Social/cultural dimension internal and external, many measures for employees, society and environment ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches
Fiat	Not mentioned	Explicitly stated	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams etc., sustainability management, key figures, LCA, risk analysis, stakeholder dialogue, production, product	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↳ Awareness raising for sustainability internal and external
				<input checked="" type="checkbox"/> not implemented: Scorecard ↳ Increasing structural integration: in the core area “product”	↳ Social/cultural dimension internal and external, many measures for employees, society, and environment ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
General Motor Company	Explicitly stated	Explicitly stated	Sustainability serves more as a tool	<input checked="" type="checkbox"/> implemented: EMS, departments/teams etc., key figures, LCA, risk analysis, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Sustainability management, scorecard ⚡ Hardly any structural integration but in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ⚡ Awareness raising for sustainability internal and external ⚡ Social/cultural dimension internal and external, many measures especially for employees and society ⚡ Ecological dimension importance is clear, diverse measures ⚡ Economic dimension importance is clear
Honda Motor Company	Explicitly stated	Not mentioned	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: Departments/teams etc., risk analysis, stakeholder dialogue, product <input checked="" type="checkbox"/> not implemented: EMS, sustainability management, key figures, LCA, scorecard, production ⚡ Hardly any structural integration but in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ⚡ Awareness raising for sustainability internal focus ⚡ Social/cultural dimension internal and external, many measures for employees, society, and environment ⚡ Ecological dimension importance is clear, diverse measures ⚡ Economic dimension no information

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
Hyundai Motor Company	Explicitly stated	Explicitly stated	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , sustainability management, key figures, LCA, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Risk analysis, scorecard ↯ Increasing structural integration: in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↯ Awareness raising for sustainability internal focus ↯ Social/cultural dimension internal and external, many measures for employees, society, and environment ↯ Ecological dimension importance is clear, diverse measures ↯ Economic dimension importance is clear
Jaguar Land Rover	Explicitly stated	Explicitly stated	Sustainability already more than a tool: on the way to becoming an integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , key figures, LCA, scorecard, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Sustainability management, risk analysis ↯ Increasing structural integration: in the core area “product” beyond beginnings	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↯ Awareness raising for sustainability internal and external ↯ Social/cultural dimension internal and external, many measures especially for employees and society ↯ Ecological dimension importance is clear, diverse measures ↯ Economic dimension importance is clear, first approaches

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
Nissan Motor Company	Mentioned indirectly	Mentioned indirectly	Sustainability as integral element	<p>☑ implemented: EMS, departments/teams <i>etc.</i>, key figures, LCA, risk analysis, scorecard, stakeholder dialogue, production, product</p> <p>☒ not implemented: Sustainability management ↳ Increasing structural integration: in the core area “product” beyond beginnings</p>	<p>☑ Change over time: <i>marginal</i></p> <p>☑ Proactive in society</p> <p>☑ Road safety</p> <p>↳ Awareness raising for sustainability internal and external</p> <p>↳ Social/cultural dimension internal and external, many measures especially for employees and society</p> <p>↳ Ecological dimension importance is clear, diverse measures</p> <p>↳ Economic dimension importance is clear, first approaches</p>
Renault	Explicitly stated	Mentioned indirectly	Sustainability as integral element	<p>☑ implemented: EMS, departments/teams <i>etc.</i>, key figures, LCA, risk analysis, product</p> <p>☒ not implemented: sustainability management, scorecard, stakeholder dialogue, production</p> <p>↳ Hardly any structural integration but in the core area “product”</p>	<p>☒ Change over time</p> <p>☒ Proactive in society</p> <p>☑ Road safety</p> <p>↳ Awareness raising for sustainability internal and external</p> <p>↳ Social/cultural dimension internal and especially external, many measures especially for employees and society</p> <p>↳ Ecological dimension importance is clear, diverse measures</p> <p>↳ Economic dimension importance is clear</p>

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
Škoda Auto	Not mentioned	Mentioned indirectly	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , key figures, risk analysis, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Sustainability management, LCA, scorecard ↳ Increasing structural integration: in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>moderate</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↳ Awareness raising for sustainability no information ↳ Social/cultural dimension internal and external, many measures especially for employees and society ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches
Toyota Motor Europe	Explicitly stated	Mentioned indirectly and somehow explicitly (but this not clear-cut)— rather indirectly	Sustainability as integral element	<input checked="" type="checkbox"/> implemented: EMS, departments/teams <i>etc.</i> , sustainability management, key figures, LCA, risk analysis, stakeholder dialogue, production, product <input checked="" type="checkbox"/> not implemented: Scorecard ↳ Increasing structural integration: in the core area “product”	<input checked="" type="checkbox"/> Change over time: <i>marginal</i> <input checked="" type="checkbox"/> Proactive in society <input checked="" type="checkbox"/> Road safety ↳ Awareness raising for sustainability internal focus ↳ Social/cultural dimension internal and especially external, many measures for employees, society, and environment ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches

Table A1. Cont.

Company	Sustainability Vision (explicit, indirect, no)	Sustainability Strategy (explicit, indirect, no)	Understanding of Sustainability (element, tool)	Implementation of Sustainability (from management to product)	Sustainability Dimensions (activities, focus, change over time)
<b>Volvo Car Corporation</b>	Mentioned indirectly	Explicitly stated	Sustainability as integral element	☑ implemented: EMS, departments/teams <i>etc.</i> , key figures, LCA, risk analysis, stakeholder dialogue, production, product ☒ not implemented: Sustainability management, scorecard ↳ Increasing structural integration: in the core area “product” beyond beginnings	☑ Change over time: <i>moderate</i> ☑ Proactive in society ☑ Road safety ↳ Awareness raising for sustainability internal focus ↳ Social/cultural dimension internal and external, many measures especially for employees and society ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches
<b>VW</b>	Explicitly stated	Mentioned indirectly	Sustainability as integral element	☑ implemented: EMS, departments/teams <i>etc.</i> , sustainability management, key figures, LCA, risk analysis, scorecard, stakeholder dialogue, production, product ↳ Increasing structural integration: in the core area “product”	☑ Change over time: <i>marginal</i> ☑ Proactive in society ☑ Road safety ↳ Awareness raising for sustainability internal and external ↳ Social/cultural dimension internal and external, many measures for employees, society, and environment ↳ Ecological dimension importance is clear, diverse measures ↳ Economic dimension importance is clear, first approaches

**Note:** ☑ means “implemented”, based on documents analyzed; ☒ means “not implemented”, based on documents analyzed; ↳ indicates a “note” and a “category” Note: EMS: environmental management system; LCA: life-cycle analysis.



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