

# Intra-industry strategic alliances for managing sustainability-related supplier risks

Managing sustainability-related supplier risks

## Motivation and outcome

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### Abstract

**Purpose** – The purpose of this paper is to explore how intra-industry strategic alliances (SAs) seek to assess supplier risk related to sustainability, what motivation drives single members to form or join such an SA, and how such a joint endeavor affects supplier risk management.

**Design/methodology/approach** – An embedded single case study with multiple units of analysis was conducted. The main data were collected through semi-structured interviews with key respondents from seven leading chemical companies, three of which were founding members of the SA, while four were new members.

**Findings** – This paper shows that forming/joining an SA concerning sustainability-related supplier risk assessment, results in the reduction of task uncertainty and equivocality as well as the increase of information processing capacities. Based on the implemented sharing routines, a higher overall efficiency can be achieved. Moreover, the members benefit from an enhanced identification of varying stakeholder expectations, a facilitated capability building and a more comprehensive supplier risk assessment. In particular, the joint endeavors result in assessment processes of higher robustness, which provide outcomes of higher quality.

**Originality/value** – This paper is the first to investigate companies' efforts toward improving their supplier risk management in the area of sustainability by establishing/joining an intra-industry SA. By providing insights into the motivation to form or join such a collaborative platform and illustrating the effects that arise from the SA's work from an organizational information processing perspective, it provides a contribution to both academics and managerial practice.

**Keywords** Sustainability, Organizational information processing theory, Case study, Strategic alliance, Strategic collaboration, Supplier assessment, Supplier risk management, Sustainability standard

**Paper type** Research paper

### Introduction

Driven by increasing outsourcing activities and the high environmental and social expectations of various stakeholder groups, sustainability has become an integral part of supply chain management (SCM) routines (Andersen and Skjoett-Larsen, 2009; Gimenez and Sierra, 2013). In this context, primary and secondary stakeholders assign responsibility to focal companies for the malpractices of their suppliers (Carter and Jennings, 2004; Hofmann *et al.*, 2014). This means that unsustainable business practices of suppliers entail a significant potential for operational and reputational risks for a company, which is why there is a need to integrate sustainability into firms' supply chain risk management (Hallikas and Lintukangas, 2016; Handfield *et al.*, 2005; Lee *et al.*, 2014). Taking this into account, sustainability-related supplier risk management (SSRM) has a strategic importance within sustainable SCM (Foerstl *et al.*, 2010; Matook *et al.*, 2009). In this context, the sustainability-related supplier risk assessment (SSRA), consisting of the evaluation of suppliers' risk potential by one or more evaluation approaches or tools, plays a central role when it comes to an effective SSRM.



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In general, the inclusion of sustainability issues into SCM inevitably leads to a more complex setting, as sustainability-related routines have to be integrated into supply chain risk management (Hall *et al.*, 2012; Seuring and Müller, 2008). In this context, the formation of a strategic alliance (SA) can be observed in some industries aiming at the establishment of common sustainability-related SCM endeavors and approaches. While on the one hand, SAs have the potential to generate shared benefits, e.g. by jointly sharing risks and investments (Ring and Van de Ven, 1992), mutual learning (Grant and Baden-Fuller, 2004; Kogut, 1988) or collectively gaining legitimacy (Baum and Oliver, 1991; Dacin *et al.*, 2007), there are, on the other hand, numerous alliance risks, such as partner opportunism (Ireland *et al.*, 2002; Kumar, 2014), defensive underinvestment (McCarter and Northcraft, 2007) or the leakage of critical know-how (Khanna *et al.*, 1998; Prashant *et al.*, 2000), that can result in marked detriments for single alliance members. Moreover, in a real-world context a two-sided manifestation in alliance effectivity can be observed showing variety when it comes to the generation of relational rents on a strategical or operational level. There are a number of positive examples that demonstrate the case of a successful sustainability-related SA implementation, such as the multi-stakeholder alliance "Roundtable on Sustainable Palm Oil," one of the first private governance initiatives to develop an internationally recognized standard that is being used for incrementally improving sustainability of the global palm oil commodity chain (Schouten and Glasbergen, 2011). However, there are also examples of failing sustainability-related SA endeavors, such as the "Child Labor Elimination Group," which was dissolved as no material advancement was made. This circumstance created a negative cost-benefit relationship, which is why the members decided to pursue this topic on their own without the involvement in an alliance (Dhanaraj *et al.*, 2011; Volkert *et al.*, 2014). Considering this field of tension that prevails during the formation and maintenance of an intra-industry SA, the questions arise as to why members chose to form or enter such horizontal collaborations dealing with SSRM and which effects result from this collaboration. These questions have so far not been investigated. In order to address this research gap, this paper poses the following two research questions:

*RQ1.* Why do companies form or join intra-industry SAs for jointly assessing sustainability-related supplier risks?

*RQ2.* How does the intra-industry SA affect the SSRM of the individual members?

On the basis of the exploratory nature of the research questions, an embedded single case study approach has been adopted. In doing so, our study provides distinct contributions from a theoretical as well as managerial perspective. First, our research provides in-depth insights into a real-world solution for overcoming prevailing barriers of SSRM and improving SSRA by the creation of a collaborative environment. Moreover, we extend the supply chain risk management framework of Foerstl *et al.* (2010) and Ritchie and Brindley (2007) by taking into account gathered observations and rationales of the organizational information processing theory (OIPT). Furthermore, we provide several findings related to current routines within the context of an intra-industry SA. We show that the formation of such an SA is motivated by the aim of reducing task uncertainty and information equivocality associated with supplier risk assessments. Such a reduction arises from enhancing the identification of varying stakeholder expectations, which allows managers to respond to these requirements in a faster and a more satisfactory way. Moreover, the joint endeavor and implemented assessment sharing routines significantly increase the amount and extent of possessed SSRA on an individual level, which in turn improves supplier risk assessment effectiveness and efficiency. In addition to reducing task uncertainty and information equivocality, the information processing capacity (IPC) of each individual member is improved by the introduction of common information processing mechanisms. This increases the reliability and quality of supplier risk assessment routines and enhances the robustness of the entire supplier risk assessment process.

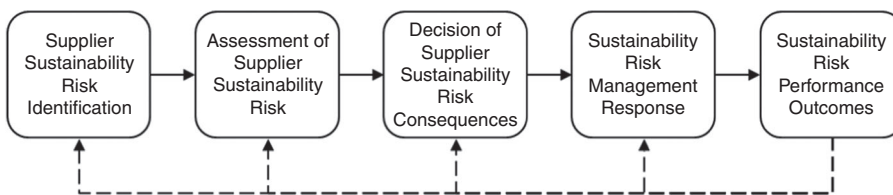
**Literature review and conceptual background**

**SSRM**

The increasing importance of SSRM in a real-world context has led to its emerging integration into research in recent years (e.g. Cruz, 2013; Hofmann *et al.*, 2014). Nevertheless, the number of publications is still low, with some focusing on environmental risks (e.g. Cousins *et al.*, 2004), social risks (e.g. Klassen and Vereecke, 2012) and single industries (e.g. Reuter *et al.*, 2010). Carter and Rogers (2008, p. 366) seize the triple bottom line approach and define supply chain risk management comprehensively as the “ability of a firm to understand and manage its economic, environmental, and social risks in the supply chain.” Such a holistic approach is essential as misconduct in environmental and social terms on the suppliers’ side, such as harmful emissions, unfair wages and excessive working hours (Giannakis and Papadopoulos, 2016) bears an operational and reputational risk for buying firms that is far from negligible (Klassen and Vereecke, 2012; Roehrich *et al.*, 2014). Since various stakeholder groups hold focal companies accountable for their suppliers’ business practices (Carter and Jennings, 2004), the exposure of sustainability-related malpractices in the upstream supply chain may have negative effects on the focal company’s reputation and provoke detrimental stakeholder reactions (Hajmohammad and Vachon, 2016; Hofmann *et al.*, 2014). Accordingly, these reactions lead to supply chain sustainability risk costs, which Busse (2016) defines as the expected loss and encompasses direct monetary (e.g. product recalls) as well as opportunity costs (e.g. lost revenues).

To systematically avoid supply chain sustainability risk costs, there is a need to implement an effective SSRM (Hofmann *et al.*, 2014). Within the existing supply chain risk management literature, diverse frameworks are proposed which provide structured approaches toward risk identification, risk assessment and risk mitigation (e.g. Giunipero and Eltantawy, 2004; Manuj and Mentzer, 2008). Foerstl *et al.* (2010) were some of the first to deliberately integrate sustainability into a conceptual framework by extending the supply chain risk management framework of Ritchie and Brindley (2007). Figure 1 shows their framework consisting of five elements.

In that respect, the stipulated SSRM and corporate sustainable supplier management have to be consistent when it comes to the identification, assessment or mitigation of sustainability-related supplier risks. Based on a predefined set of criteria, the SSRA takes a central role in the SSRM (Foerstl *et al.*, 2010) and positively impacts the sustainability-related performance of the buying firms (Keating *et al.*, 2008; Large and Gimenez Thomsen, 2011). The SSRA may be performed by applying a single evaluation tool or combinations thereof, such as supplier self-assessment questionnaires or on-site audits (Gimenez and Sierra, 2013; Kortelainen, 2008). Based on the results of the SSRA, adequate management responses are triggered to reduce the risk profile of the supplier base, which may encompass supplier phase outs, non-consideration of suppliers or joint endeavors in the form of supplier development and training initiatives aiming at improving the environmental (Gimenez and Sierra, 2013; Lee and Klassen, 2008) and social performance (Sancha *et al.*, 2016) of suppliers. According to Hajmohammad and Vachon (2016), the final



**Figure 1.**  
Sustainability-related  
supply chain  
management  
framework

Sources: Adapted from Foerstl *et al.* (2010) and Ritchie and Brindley (2007)

choice of the appropriate risk management strategy for single suppliers depends on the buying firm's risk perception and the existent buyer-supplier dependency.

However, the effective implementation of a comprehensive SSRM is difficult, as various internal and external barriers prevail (Sajjad *et al.*, 2015). Amongst others, financial aspects, such as costs due to continuous monitoring, evaluation and reporting routines (Seuring and Müller, 2008) or initial investments (Giunipero *et al.*, 2012), internally impede the adoption of sustainability-related routines. One of the greatest barriers is a comprehensive stakeholder management, which is inherently complicated because of the large number of different stakeholders, their distinct and varying expectations and their disparate perceptions of equal circumstances (Hall *et al.*, 2012; Meixell and Luoma, 2015). On the supplier side, the lack of awareness or capabilities leads to a significant reluctance to incorporate social and environmental issues into suppliers' routines (Faisal, 2010; Sajjad *et al.*, 2015). In general, a more extensive sustainable supplier management leads to an increasing burden for the supplier, which in turn results in a more depreciating attitude of suppliers toward sustainability issues (Giunipero *et al.*, 2012; Leire and Mont, 2010). Moreover, the lack of global sustainability regulations and standards makes it difficult to cope with the heterogeneous and altering conditions inherent in global supply chain networks (Faisal, 2010; Giunipero *et al.*, 2012; Hall, 2000).

#### SAs

The complex real-world environment, which arises from the integration of sustainability-related concerns in supplier management, provides sufficient scope for the formation of sustainability-related SAs, as according to Lin and Darnall (2015), SAs emerge primarily in business settings that are determined by uncertainty and complexity. By forming an SA, which Gulati (1998) defines as a voluntary arrangement between two or more companies involving the exchange, sharing or co-development of resources or capabilities, the members aim at jointly creating values that cannot be generated by isolated and independent endeavors (Dyer and Singh, 1998; Kogut, 1988). Besides the complexity-driven reasoning, the decision to enter into SAs can be a result of a variety of motives correlating with the overall strategic objectives of the single members, which in turn influence the selection of the alliance structure and the choice of alliance partners (Lin, 2012; Lin and Darnall, 2015; Shah and Swaminathan, 2008). In general, the motives are manifold, encompassing sharing risks and investments (Ring and Van de Ven, 1992), organizational learning (Grant and Baden-Fuller, 2004; Kogut, 1988), gaining power in the market (Eisenhardt and Schoonhoven, 1996; Hagedoorn, 1993) or gaining legitimacy (Baum and Oliver, 1991; Dacin *et al.*, 2007).

Depending on their own strategical motivation and intended partner diversity, companies can choose between intra-industry and cross-industry/cross-sector SAs (Austin, 2000; Lin, 2012). Within intra-industry SAs, there is a further distinction between horizontal alliances (i.e. an alliance with partners of the same supply chain tier) and vertical alliances (i.e. an alliance with partners of distinct supply chain tiers) (Lazzarini *et al.*, 2008). Moreover, Hennart (1988) and Dussauge *et al.* (2000) outline that in the particular case of an SA formation between competitors, such an SA is either a so-called "scale alliance," in which alliance partners contribute resembling capabilities to enhance efficiency in existing processes and routines, or a "link alliance," in which the competing members share distinct capabilities or assets to learn from each other in order to develop new potentials. Regardless of the characteristics of the horizontal collaboration, alliance partners are in an environment of permanent tension between cooperation and competition (Zeng and Chen, 2003). This may lead to risks such as defensive underinvestment by single members (McCarter and Northcraft, 2007) and the leakage of critical know-how (Khanna *et al.*, 1998; Prashant *et al.*, 2000).

While research on SAs has focused on marketing, production or research and development, sustainability-related SAs have been largely neglected so far. There is a small number of papers primarily dealing with cross-sector SAs in a sustainability context, many of which focus on the investigation of collaborations with sustainability-oriented NGOs and the effects on corporate sustainability efforts (Arya and Salk, 2006; Lin, 2012). On the other side, research on horizontal SAs with a sustainability context has received little attention so far. This can be attributed to the fact that their formation is a recent phenomenon in the real-world context, emerging from the corporate challenges and barriers in implementing a comprehensive sustainable supplier management, as a result of the great complexity inherent to the topic and the increasing expectations addressed by stakeholders.

### *OIPT*

In accord with the OIPT, an organization can be seen as an open social system that involves various internal and external stakeholders and performs a wide range of tasks by processing information (Thompson, 1967; Tushman and Nadler, 1978). The basic assumption of OIPT is that organizational performance is contingent on the fit between the firm's information processing requirements (IPR) and its IPC (Galbraith, 1973; Tushman and Nadler, 1978). In this context, information processing needs increase with task uncertainty, which Galbraith (1977, p. 36) defines as "the difference between the amount of information required to perform the task and the amount of information already possessed by the organization." This deficit of information regarding quantity and quality is encountered in particular because of complex and dynamic environments, confronting the organization with a large number of heterogeneous factors which in turn enhance internal complexity in processing them (Duncan, 1972; Stock and Tatikonda, 2008; Trentin *et al.*, 2012). Besides the general task uncertainty, Daft and Lengel (1986) pose that organizational information processing is additionally influenced by equivocality, which can be seen as the ambiguity of information leading to different and conflicting interpretations. With increasing task uncertainty and equivocality, a reduction of information processing needs as well as a higher IPC are necessary to ensure that the task is completed in a satisfactory manner (Galbraith, 1977; Stock and Tatikonda, 2008; Thomas and Trevino, 1993).

The measures which an organization ultimately introduces are dependent on the perceived uncertainty and the level of equivocality as well as the relative costs and time requirements associated with them (Stock and Tatikonda, 2008; Winkler *et al.*, 2015). Taking this into account, SCM is especially affected by a constant challenge of reducing uncertainty and equivocality. This in turn is a result of complex and dynamic supply chain relations with prevailing information asymmetry (Srinivasan and Swink, 2015; Wong *et al.*, 2015). The inclusion of sustainability-related issues leads to additional complexity, due to the inclusion of further stakeholders and their interests (Hall *et al.*, 2012; Seuring and Müller, 2008). As a result, firms need to adjust their IPC, which can be supported by the adaption of organizational structures and designs to address the required level of information processing (Daft and Lengel, 1986; Galbraith, 1977). The creation of lateral relations has been seen as one strategy to improve the fit between IPRs and IPCs by enhancing the amount and rate of horizontal communication and overcoming individual limitations (Galbraith, 1977; Joyce *et al.*, 1997; Srinivasan and Swink, 2015).

### **Methodology**

#### *Research design*

An embedded single case design is applied to address the two research questions proposed above. This approach has already been used in research on SCM, corporate sustainability management and intra-industry collaboration management (Kourula, 2010; Lettieri *et al.*, 2013). Furthermore, this approach is suitable for our research endeavor for several reasons. First, the

case study methodology allows for the investigation of a contemporary and complex phenomenon in-depth and within its real-world context by interacting with informants and relying on multiple sources of evidence (Voss *et al.*, 2002; Yin, 2014). Furthermore, accurate triangulation practices in case study research reduce the risk of social desirability bias which is inherent to sustainability-related research (Carter and Easton, 2011; Hall and Matos, 2010). Moreover, a theory elaboration approach is applied which is framed by the usage of a general theory and framework to approach the specific empirical setting (Dubois and Gibbert, 2010; Ketokivi and Choi, 2014; Pratt, 2008). This approach relies on an abductive reasoning that comprises the modification of “[...] the logic of the general theory in order to reconcile it with contextual idiosyncrasies” (Ketokivi and Choi, 2014, p. 236). This approach is particularly suitable for our research, as the special sustainability-related SA context does not allow the *ex ante* deduction of hypotheses related to the OIPT. Rather, the gathered data and the OIPT are simultaneously investigated to elaborate on theory (Ketokivi and Choi, 2014). To further ensure validity and reliability throughout the different stages of research, several measures have been introduced, which are presented in Table I.

*Sampling*

As intra-industry SAs within SSRM are far from being common practice, the number of potential cases is limited. Thus, our research is focused on one single revelatory SA within one industry to ensure in-depth analysis. In this context, an SA formed in the chemical industry was chosen as a unit of analysis for two reasons. First, chemical companies experience a strong pressure from their stakeholders with regard to social and environmental responsibility. This is due to the different and serious hazards resulting from chemical operations, reflected by a long history of incidents with severe environmental

Reliability/ validity criterion	Research design	Case selection	Research phase	
			Data collection	Data analysis
Construct validity	Questions were developed based on an extensive review of literature	n/a	Collection of primary and secondary data as sources of information Multiple interviewees within each case of analysis	Interviewees reviewed the case study protocol to eliminate misunderstandings and ambiguities
Internal validity	Theoretical framework	n/a	Recording factors that might lead to alternative explanations	Cross-case analysis in search for patterns Triangulation of multiple data sources Discussion between authors to attain inter-rater agreement
External validity	Sampling within the chemical industry	Clear description of case firms, their context and situation	n/a	Analytical generalization based on patterns emerging in the data
Reliability	Develop case study protocol from primary and secondary data	Selection of a revelatory single case with embedded multiple units of analysis based on predefined and recorded criteria	Shared questionnaire for all interviewees with a similar alliance status (founders, new members) Utilization of case study database	Involvement of a third author who was not involved in data collection

**Table I.**  
Validity and reliability measures throughout the research phases

**Sources:** Adapted from Gibbert *et al.* (2008) and Yin (2014)

and health consequences, which makes compliance with social and environmental requirements an important and strategic issue in the chemical industry (Reuter *et al.*, 2010). Second, the formation of this SA in particular took place less than five years before the start of our research project. This gave us the opportunity to interview executives and decision-makers who were directly involved in the formation, joining process or supported the ongoing development of the SA.

At the time of study, the SA consisted of 16 active members, from which six companies were listed as founding members, and ten as members that recently joined the SA. Furthermore, two more companies were in the onboarding process. Of the total of 18 members, three founding companies ( $A_F$ ,  $B_F$  and  $C_F$ ) and four new members ( $D_N$ ,  $E_N$ ,  $F_N$  and  $G_N$ ) agreed to participate in our study (see Table II). To address the potential presence of a non-response bias, we additionally considered publicly accessible secondary data, such as corporate sustainability reports, press releases or media reports of those companies that refused to participate to check whether the additional information would provide further insights that were not made apparent by the interviewed companies. By doing so, however, no further relevant data were revealed.

#### *Data collection*

To ensure high construct validity, multiple sources of evidence were considered during data collection (Eisenhardt, 1989; Gibbert *et al.*, 2008; Yin, 2014). Interviews with key employees served as primary source of information and were based on a semi-structured interview guide developed from an extensive review of literature and by taking into account the framework of Foerstl *et al.* (2010) and Ritchie and Brindley (2007). For reasons of triangulation, primary data were complemented by secondary sources of information, such as supplier code of conducts, process guidelines, supplier evaluation sheets and presentations shared by informants. In addition, further secondary data were collected prior to the interviews, such as corporate sustainability reports, sustainability sections within annual reports, publications from NGOs or press releases, to obtain initial insights into the case companies' sustainability management and to validate interview results in the aftermath. In all participating companies, the procurement and corporate strategy departments were contacted, as these functions decisively shape the SA's structure and work. The consideration of these two departments ensured the inclusion of key employees who were either actively involved in the formation and joining process or had experience concerning the implementation of the SA within their respective organization. In total, 17 interviews were conducted in the period between July and December 2015. The interviews lasted between 60 and 95 minutes and were all conducted by two members of the research team. While seven interviews were conducted on site at the respective headquarters of the companies, ten were conducted via web conferences or over the phone due to irreconcilable schedules. For reasons of triangulation, we approached two to three informants per company (Eisenhardt and Graebner, 2007, p. 28). In sum, ten interviewees authorized us to record the entire interview. Notwithstanding the above, each interviewer took copious notes on answers and presented secondary data during the interviews. After each interview, the individual notes and observations were discussed by the team of authors and condensed to the respective final case protocol, which was conclusively reviewed by the interview partners to eliminate misunderstandings and ambiguities (Yin, 2014). Finally, a case study database was established to support reliability (Gibbert *et al.*, 2008; Yin, 2014).

#### *Data analysis*

To identify patterns and structures in the primary data for the subsequent analysis, a coding procedure was introduced (Strauss and Corbin, 1990; Yin, 2014). For the initial open coding scheme, the unstructured qualitative data, consisting of interview quotes and notes,

**Table II.**  
Overview of case  
companies

	$A_F$	$B_F$	Founders (F)		$D_N$	$E_N$	New members (N)		$G_N$
			$C_F$				$F_N$		
No. of suppliers (in 1,000)	> 30	> 30	10-20	> 30	> 30	20-30	10-20	< 10	
Pre-alliance experience with SSRM	7-8 years	6-7 years	8-9 years	5-6 years	2-3 years	2-3 years	1-2 years	< 1 year	
FTEs <sup>a</sup> (prior alliance)	1	1-2	0.5	0.5-1	0.5	0.5	0.5	< 0.5	
FTEs <sup>a</sup> (actual)	4	5	2-3	2	1-2	1-2	1-2	1	
No. of informants	2	3	3	2	2	2	2	3	
	Head of sustainability purchasing Supplier sustainability manager	Head of procurement Corporate safety, health and environment manager	Head of sustainability procurement Corporate safety, health and environment manager	Head of business unit purchasing Head of procurement processes and quality Global systems and corporate sustainability manager	Global purchasing director Sustainable sourcing manager	Head of corporate sustainability strategy Head of procurement strategy initiatives	Procurement director, Europe Director for alternative methods of supply	Director services and processes Global purchasing manager corporate strategy manager	

**Note:** <sup>a</sup>Full-time equivalent (while an FTE of 1.0 is equivalent to an employee working full-time, an FTE of 0.5 indicates half of a full workload)



were individually consolidated and classified into descriptive codes by two members of the research team. The assigned codes sought to match the terminology which was previously identified in the literature review. The secondary data that were gathered were screened to verify primary data and – if applicable – to identify and assign further codes, which were not apparent from primary data (e.g. internal guidelines and process descriptions for sustainability-related supplier nomination). In doing so, groups with codes of similar content were clustered to derive higher order codes. Simultaneously, elements and concepts of the OPIT were taken into account to ensure the consistent application of the theory elaboration approach. In order to mitigate the inherent investigator bias and to ensure inter-rater reliability, the coding results obtained individually were compared and discussed within the research team. Differing codes and interpretations were addressed and rearranged until concordance was reached. In the next step, the results from the within-case analysis were transferred *inter alia* into a tabular format. The subsequent cross-case analysis sought to identify similar characteristics and differences among the single units of analysis (Da Mota Pedrosa *et al.*, 2012; Eisenhardt and Graebner, 2007) that are based on the processed empirical data as well as on the OIPT.

### Analysis and discussion

Before analyzing how the intra-industry SA work affects the participating companies' SSRM, this particular single case is introduced by describing the alliance's structure and routines and by analyzing the motives to form or join the alliance. For all considerations, Table III, which was deduced from the interviews, provides an overview of the case companies' characteristics and their SSRM practices.

#### *Motivation for SSRA-related SA endeavor*

All SA members pursued the effective implementation of their own SSRM prior to the alliance formation or before joining the SA. It was necessary to consider the sustainability-related requirements of the various stakeholders (e.g. customers, legislation, financiers and NGOs) in the management of new and existing suppliers. In order to evaluate suppliers' compliance, sustainability-related assessments and audits were introduced to gather the necessary information. However, the founding members stated that the implementation was complex in nature, as they were confronted with a multitude of different aspects and with a large number of suppliers that needed to be checked. In this regard, the head of sustainability procurement of  $B_F$  experienced increasing requirements from their external stakeholders both in number and in diversity, adding further complexity to the management process. Confronted with the large number of suppliers and the limited internal resources available to assess them, the level of implementation did not reach a satisfying dimension, as  $A_F$ 's supplier sustainability officer stated:

We had an intelligent questionnaire, which we sent to our suppliers and had to analyze afterwards. In any case, this was quite complex and time-consuming. Our procurement staff was confronted with a workload that was too large to manage.

To ensure that the submitted answers were accurate and truthful, suppliers had to attach further information (evidence documents), such as ISO 14001 certification or the management system certification OHSAS 18001. Many of the suppliers, especially suppliers from emerging or developing countries, did not have such certifications and included other evidentiary documents to demonstrate compliance. The resulting diversity of documentation meant that the evaluation was often an individual matter, which in turn increased the internal workload.

During the pre-alliance phase, each focal company had to approach its suppliers independently. In order to overcome this dissatisfying status quo, six multinational

**Table III.**  
Company  
characteristics

	$A_F$	Founders ( $F$ ) $B_F$	$C_F$	$D_N$	$E_N$	New members ( $N$ ) $F_N$	$G_N$
Drivers for alliance endeavor	Limited resources Complexity	Limited resources Complexity Stakeholders	Limited resources Complexity Increase efficiency Compile standard	Strategic changes Stakeholders	Strategic changes Stakeholders	Strategic changes Stakeholders	Strategic changes Stakeholders
Aim of alliance endeavor	Increase efficiency Compile standard	Increase efficiency Compile standard	Increase efficiency Compile standard	Increase efficiency Learning	Increase efficiency Learning	Increase efficiency Learning	Increase efficiency Learning
Supplier nomination criteria	1. Strategic status 2a. Country risk 2b. Category risk (minimum spend)	1. Spend 2a. Country risk 2b. Category risk	1a. Spend 1b. Strategic status 2a. Country risk 2b. Category risk	1a. Spend 1b. Strategic status 2. Country risk	1. Spend 2a. Country risk 2b. Category risk 2c. Supplier profile	1. Spend 2. Country risk	1a. Spend 1b. Strategic status 2. Country risk
Further assessment efforts	Own HSE <sup>a</sup> -audits	–	–	Accompanying each on-site audit	Own audits incl. sustainability	Own audits incl. sustainability	–
Ex post assessment	Action plan Advanced training Joint development Phase out	Action plan Advanced training Joint development Phase out	Action plan Phase out	Action plan Joint development Phase out	Action plan Joint development Phase out	Action plan Phase out	Action plan Phase out
Assessment coverage <sup>b</sup>	60%	90%	50%	60%	40%	n/a <sup>d</sup>	30%
Contribution ratio <sup>c</sup> (own/alliance partners)	70/30	70/30	70/30	50/50	50/50	n/a <sup>d</sup>	60/40
Perceived effects	Ameliorated data basis Cost savings Improved mechanisms Stimulate internal commitment	Ameliorated data basis Cost savings Improved requirement detection Higher supplier acceptance	Ameliorated data basis Cost savings Higher supplier acceptance	Ameliorated data basis Cost savings Improved mechanisms Higher supplier acceptance Stimulate internal commitment	Ameliorated data basis Cost savings Improved mechanisms Organizational learning	Ameliorated data basis Cost savings	Ameliorated data basis Cost savings Organizational learning Higher supplier acceptance

**Notes:** <sup>a</sup>Health, safety and environment; <sup>b</sup>the percentage of the purchasing volume, which has been covered by SSRAs; <sup>c</sup>to what extend the SSRA coverage is accomplished by the own or alliance partners' efforts; <sup>d</sup>not yet evaluated by  $F_N$

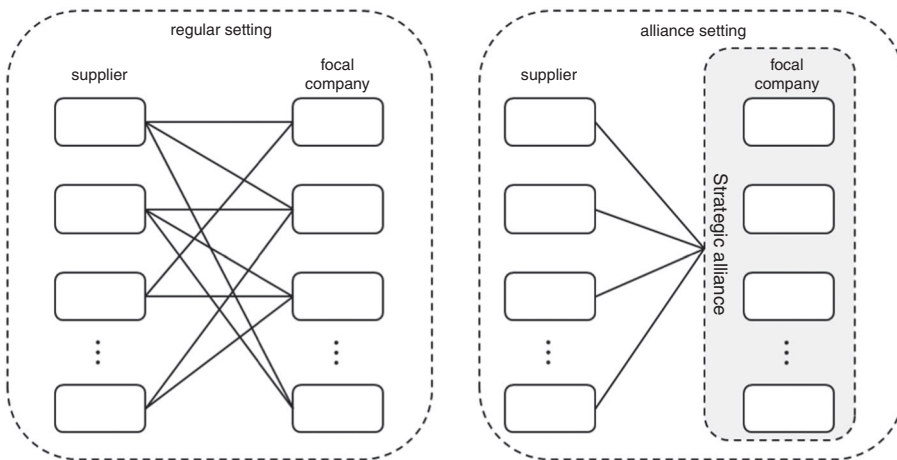
chemical companies decided to establish an SA with the aim of compiling a cross-company standard concerning the gathering of sustainability-related supplier risk information, as  $C_F$ 's head of procurement processes and quality stated:

Our aim was to create a standard in order to eliminate approaching our suppliers with six different questionnaires, which had a substantial content overlap. With a common standard we can do this together in an efficient manner.

The definition of a common set of criteria concerning SSRA and aligned processes was required to facilitate the sharing of SSRAs among the participating companies. This in turn enables the creation of a more efficient setting (as shown on the right side of Figure 2), since single suppliers only have to be assessed or audited once. The alliance members stated that, based on the introduced sharing routines, they are able to avoid redundancies from a cross-company perspective and increase the amount of gathered sustainability-related information on single suppliers for each single member, without increasing the internal level of resource allocation.

Taking into account the OIPT perspective, the empirical data illustrate that the pre-alliance setting was dominated by a high task uncertainty, which was shaped by the individual high amount of sustainability-related information required to satisfactorily perform the SSRM tasks and the prevailing internal limitations (e.g. limited personnel or budget) that hamper individual IPC. Under these circumstances, the work in an SA can be seen as a measure that reduces the sustainability-related task uncertainty in a cost-effective manner. While the IPRs remain unchanged in this new setting, as they are basically predefined by external factors (e.g. stakeholder minimum requirements), the IPCs are increased by entering into lateral relations (Galbraith, 1973; Srinivasan and Swink, 2015). Along with this observation, it can be assumed that the introduction of a standardized inter-organizational SSRA approach as well as the implementation of SSRA sharing routines reduce the sustainability-related task uncertainty on an individual level. These observations lead us to the first proposition:

*P1a.* The formation of an SA concerned with SSRA is driven by the motivation of creating a more efficient SSRA setting through the introduction of a common inter-organizational assessment standard and SSRA sharing routines.



**Figure 2.** Schematic comparison of the regular and SA setting

— sustainability related supplier assessment/audit

After the initial development, the six founding members opened up the SA to other chemical companies. All new members stated that the motivation to increase their own operational efficiency by joining the SA was also very strong, as  $F_N$ 's director for alternative methods of supply mentioned:

With joining [the strategic alliance] we were able to structure our approach in a more efficient way. [...] The advantage is that you leverage the work done by the others.

Beyond that, each new alliance entrant categorized the additional acquisition of process-related knowledge and the inherent organizational learning effects as important arguments for joining the alliance, as the head of procurement strategy initiatives of  $E_N$  affirmed:

We would thus be able to bring our own processes to a new advanced level, which we would not be able to achieve on our own, at least not in the short term.

While  $G_N$  had little experience with sustainability-related risk assessments and had just recently started to implement processes in a pilot,  $D_N$ ,  $E_N$  and  $F_N$  had already established first SSRM routines (see Table II). However,  $E_N$  and  $F_N$  only focused their early efforts on the environmental dimension. Prior to joining the SA,  $E_N$  and  $F_N$  decided to additionally incorporate the social and expand the environmental dimension, as customers were increasingly addressing these topics, while  $D_N$  realigned its sustainability strategy with the imperative to expand and deepen SSRM as a whole.

The simultaneous consideration of the case data and rationales of the OIPT show that new members were aiming at increasing their IPCs by adopting the SA's routines and capabilities. According to Joyce *et al.* (1997) lateral relations are particularly fruitful as they support and promote learning by the creation of further bilateral exchange and communication channels. From the perspective of the new SA members, the SA was a fruitful solution to manage the increasing IPR that arose due to the new members' sustainability-related realignment, which involved the restructuring of existing processes. In addition to increasing the processing efficiency, the SA provides the new members a platform for efficiently increasing their sustainability-related IPCs. In particular, this is achieved by the inter-organizational transfer of sustainability-related experiences and the active learning from successfully implemented SSRM practices. Thus, we posit:

- P1b.* Joining an existing SA concerned with SSRA is driven by the motivation of adopting a more efficient SSRA setting and facilitating the SSRA-related capability building.

#### *Effects on sustainability-related supplier risk identification and assessment*

It is important to consider the stakeholders' requirements on a regular basis, as  $B_F$ ,  $E_N$ ,  $F_N$  and  $G_N$  stated. The extension of the sustainability-related efforts of  $E_N$ ,  $F_N$  and  $G_N$  were directly linked to the new perceived stakeholder requirements. In order to respond to these directly or indirectly articulated requirements, the members need to identify and interpret them in an adequate and extensive manner. This is especially important as this initial step markedly shapes the subsequent stages of the SSRM process and determines the scope and extent of the SSRAs. However,  $B_F$  mentioned that this task is complex in nature, as it implies the consideration of various stakeholders having diverse aims, requirements, and views, which may, in addition, vary over time. As a consequence, the members are confronted with ambiguity of information which may lead to varied and conflicting interpretations resulting from selective perceptions. The established SA allows the exchange and discussion of distinct views and

interpretations amongst different market participants, as  $B_F$ 's corporate safety, health and environment manager stated:

[...] we discuss various sustainability issues with colleagues with different experiences and different backgrounds on a regular basis [...]. We actually do so every time when new requirements arise: as now, for example, the UK "Modern Slavery Act." Here we exchange views, and discuss how it affects us and how we should respond to it.

Based on this approach, the members create an effective setup to deal with new and changing stakeholder requirements, both by using a larger basis of information and consensually discussing situations and interpretations. In general,  $B_F$ 's head of sustainability procurement elucidated that, in doing so, they have recourse to an increased amount of information regarding stakeholders' static and varying sustainability-related requirements, which can provide both further information concerning their own stakeholders and additional information concerning non-stakeholders. While the former directly supports the reduction of ambiguity (e.g. contradictory or fuzzy expressed requirements), the latter reduces the risk of non-consideration or inadequate consideration of relevant stakeholder requirements.

From an OIPT perspective the reduction of equivocality (resulting from ambiguity) can be supported by jointly discussing and processing individual perceptions – which are the result of distinct experiences, capabilities and organizational structures – in group meetings (Daft and Lengel, 1986; Winkler *et al.*, 2015). The case study's observations support this notion for the special case of SA for joint SSRAs showing that the inter-organizational management of stakeholder expectations reduces sustainability-related equivocality on an individual level. This is why we postulate:

*P2a.* Membership in an SA concerned with SSRA positively affects the single member's capability to identify and respond to varying expectations and requirements of stakeholders.

Since the results of the SSRAs serve as a basis for the sustainability-related evaluation of suppliers and thus also for the derivation of potential follow-up activities, it is particularly important to be able to rely on clear and unambiguous sustainability-related information generated by SSRAs. Prior to the SA endeavor this was only possible to a certain extent, as founding and new members confirmed. While most of the SA members ( $A_F$ ,  $B_F$ ,  $C_F$ ,  $D_N$ ,  $E_N$  and  $F_N$ ) had already introduced sustainability-related self-assessment questionnaires prior to forming or entering the SA, only a few members had already carried out their own sustainability-related audits ( $A_F$ ,  $B_F$ ,  $C_F$  and  $D_N$ ). With the aim of creating a common standard for sustainability-related self-assessment questionnaires and audit guidelines, the individual approaches of the single participants were discussed and analyzed to determine a common setup with a joint set of criteria. As expected, some of the criteria previously applied by the individual members overlapped, but the new joint criteria brought the benefit of comprising a broader spectrum of environmental as well as social indicators, as  $B_F$ 's corporate safety, health and environment manager indicated:

When comparing the individual assessment documents, we found several matches, but also differences concerning breadth and depth of single sustainability issues. [...] In the end, we elaborated a new catalogue which can be seen as the synergistic consolidation of individual corporate expectations.

This described extension applies to both founding and new members, even though the greatest leaps have been observed for new members in particular ( $E_N$ ,  $F_N$  and  $G_N$ ). In this regard, the additional inclusion of evidence documents to the self-assessment questionnaires, the further consideration of secondary data (e.g. information on suppliers from reports or statements from NGOs), the integration of audits into the regulating

processes, and the addition of further sub-criteria that query issues in greater depth improved information richness for each single member, as the head of sustainability purchasing of  $A_F$  stated:

What I really appreciate – what would not have been possible to manage on our own – is the extensive use of evidence documents and the inclusion of external information.

All in all, each single member has an extended and enriched base of data and information on hand, improving the evaluation of suppliers' environmental and social performance.

Besides the reduction of equivocality in sustainability-related supplier risk identification, the empirical data show that the new organizational setup also supports the processing of equivocality and task uncertainty in the following stages. Taking into account the OIPT, the SA provides information of higher richness, which positively influences the diminution of information equivocality (Daft and Lengel, 1986; Stock and Tatikonda, 2008). This is notably provided by the targeted augmentation of supportive information (e.g. evidence documents). Moreover, the single members can rely on a greater scope of information, as the spectrum of environmental as well as social indicators was pointedly increased, which in turn increases the amount of possessed information. As a consequence, task uncertainty is also reduced as the gap between necessary and possessed information becomes smaller (Galbraith, 1977; Stock and Tatikonda, 2008). Therefore we derive the following proposition:

*P2b.* Membership in an SA concerned with SSRA enables both the application of a broader spectrum of sustainability-related indicators and a more in-depth inquiry of single sustainability indicators within SSRAs.

All SA members are confronted with a large number of suppliers, which have to be approached for a comprehensive SSRM. Considering the limited internal resources, each member manages the task systematically by applying supplier nomination routines. Based on this prioritization the supplier base is approached incrementally. However, the applied supplier prioritization strategies are heterogeneous across participating companies (see Table III), as they are intentionally determined on an individual basis and not coordinated within the SA. Most strategies are spend-driven, resulting in quick wins for most members, since few of their own SSRAs cover a large part of the corporate purchase volume. While all members have a top-down approach in place,  $A_F$  pursues a minimum spend principle. In addition,  $A_F$ ,  $C_F$ ,  $D_N$  and  $G_N$  consider the internal strategic status or relevance of the supplier. However, the deeper one dives into the supplier base, the more difficult it gets to effectively extend the spend coverage. Suppliers' willingness to participate in or shape sustainability-related routines is largely dependent on the perceived relevance of focal companies and the focal companies' exerting pressure on suppliers, as  $B_F$ 's head of sustainability procurement experiences have shown:

It is much easier for us to convince a supplier to participate if you have, for example, a five times higher spend.

The SA setting provides benefits in respect to receiving required sustainability-related information from non-strategical suppliers, which – based on their own supplier nomination criteria – have a lower prioritization classification. The established SSRA sharing routines and the alliance members' varying supplier base compositions allow the leveraging of individual efforts, as  $D_N$ 's sustainable supplier sourcing manager mentioned:

We already had programs in place before joining. But we primarily focused our efforts on strategic suppliers in critical regions in order to reduce our risk profile in an effective manner. Now, we have a much broader range and are addressing much more suppliers, especially non-strategical suppliers, via our initiative partners.

The SA members stated that the extent to which the SSRA coverage is accomplished through alliance partners' efforts comprises 30-50 percent (see Table III), whereas the majority of the shared SSRAs addresses the non-strategical supplier base. The SSRA coverage can more easily be increased for suppliers that would have caused economically unfavorable assessment conditions if the particular company had conducted its own SSRAs.

In an OIPT context, the observations show that the new inter-organizational constellation enables the exploitation of member-specific buyer-supplier relationships in order to reduce sustainability-related task uncertainty. In particular, the SA creates a setting that reduces supplier-related barriers, such as suppliers' lack of resources or motivation (Giunipero *et al.*, 2012; Sajjad *et al.*, 2015) by both approaching suppliers only once and making use of the members' individual power relations. From a single member perspective this is especially valuable for the reduction of sustainability-related task uncertainty concerning the non-strategical supplier base (Galbraith, 1977), as the introduced sharing routines provide members with necessary but difficult to obtain information concerning non-strategical suppliers. Consequently, we posit:

*P2c.* Membership in an SA concerned with SSRA facilitates and accelerates the SSRA coverage of the non-strategical supplier base.

In addition to discussing content modules, the founding members outlined that common processes and set-ups had to be coordinated in the formation phase. To effectively make use of the existing potential, it was necessary to coordinate rules, e.g. through the establishment of a common standard and process-related minimum requirements, as well as common objectives. As one of the first steps, the founding members introduced a web-based platform as a joint solution which facilitates the sharing, processing and evaluation of SSRAs. This common approach facilitates the reliable and simple processing of the provided information, as the supplier sustainability manager of  $A_F$  stated:

Our previous self-assessment questionnaire was Excel-based and hard to handle. Added to that, each sourcing manager interpreted the results differently. So it was not really aligned. Our new web-based approach makes life easier.

In addition to the implementation of a cross-company information system, it was stated by members  $A_F$ ,  $D_N$  and  $E_N$  that the quality of the entire SSRA process has significantly improved, which in turn positively affects the reliability and quality of the assessment results. In order to ensure, for example, quality and compliance with the predefined standards, each participating company has to conduct witness audits on a random sample basis by accompanying accredited the third party auditors, which are responsible for the audit conduction, with corporate experts. The major contribution is made by the newly established SA setting, as  $E_N$  described:

The common methodology and deployment through a very rigorous assessment process and selection of auditors provide a significant robustness and credibility of the entire process.

This setting has been shaped mainly during the formation phase, in which each founding member brought their individual SSRA processes into discussions. Nonetheless, process optimization is still an ongoing process, which is why the SA has established workstreams, where current developments and challenges are discussed in a group of designated personnel from each member.

In accordance with Galbraith (1977), who presents the introduction of communication and information technologies as one organizational design strategy to realign IPCs, our observations illustrate that the introduction of an inter-organizational web-based platform facilitates and supports the increase of sustainability-related IPCs. In addition, the

introduction of self-contained tasks (e.g. clear process allocation) and the coordination of rules (e.g. number of assessments per company) within the SA lead to a more robust setup of sustainability-related IPC (Galbraith, 1977; Trentin *et al.*, 2012), which in the following positively affects the quality. Accordingly, we postulate:

*P2d.* Membership in an SA concerned with SSRA improves both reliability and quality of SSRA processes and resulting SSRA outcomes.

*Effects on the entire SSRM*

While the work within the SA setting directly supports the first two stages of SSRM it only affects the subsequent phases indirectly. Based on the previously mentioned positive effects arising from the SA's work, each member has recourse to a more extensive base of information for the subsequent decision-making process and the development of adequate measures. Nonetheless, each member takes different approaches to process the provided information. Thus, the single members are ultimately responsible for the individual effectiveness of the SSRM themselves, as *B<sub>F</sub>*'s head of sustainability procurement emphasized:

All members benefit from this program, but it can be assumed that not all implement the program with the same excellence into their overall process. Thus, you can differentiate by how you use the results for your own operations.

This also corresponds with the general idea prevalent in the SA, which intentionally excludes the homogenization of the entire SSRM process and leaves space for differentiation, which is inevitable in order to comply with antitrust laws. Based on these various findings from the cross-case analysis, we extended the framework of Foerstl *et al.* (2010) and Ritchie and Brindley (2007), as shown in Figure 3.

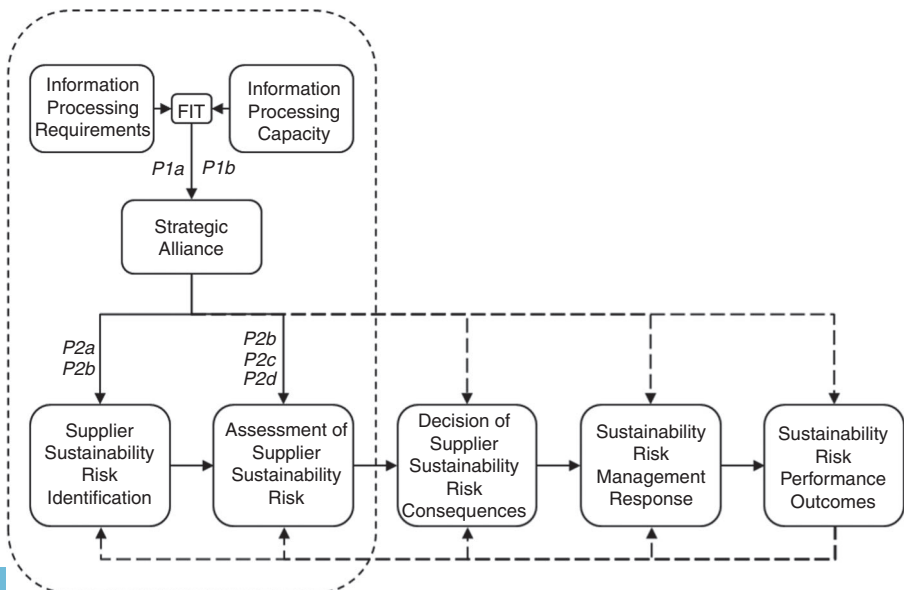


Figure 3. Extended framework



### Conclusion, implications and further research

Built on an embedded single case study, our research aimed at investigating SAs for SSRM from an OIPT perspective, as they gain increasing importance in business practice. For doing so, a selected SA for joint SSRAs in the chemical industry was examined to gain insights on the motives of single members to form or join such an initiative and the effects of the SA's work. Since such phenomena are still underexplored, our findings are valuable for both scholars and practitioners.

Based on the OIPT and the gathered empirical data, we developed propositions which encompass both the motivation to form/join such an endeavor (*P1a* and *P1b*) and the outcomes on SSRM that arise from the alliance's work (*P2a-P2d*). Moreover, we expand the existing sustainable SCM literature by providing insights from a real-world approach aiming at solving the prevailing barriers (Giunipero *et al.*, 2012; Hall *et al.*, 2012; Seuring and Müller, 2008) in a collaborative and collective manner. As a result, we extended the theoretical supply chain risk management framework of Foerstl *et al.* (2010) and Ritchie and Brindley (2007) by adding rationales related to OIPT in an SA context into their SSRM model. In this context, the study's findings provide a first indication that SAs for joint SSRAs have direct and positive effects on the supplier sustainability risk identification and assessment stages as well as indirect effects on subsequent stages of SSRM. At first, the standardized inter-organizational SSRA approach in an SA reduces sustainability-related task uncertainty and diminishes sustainability-related equivocality by creating collective capabilities concerned with identifying and responding to stakeholders' requirements and increasing the amount of required information of appropriate richness. This is particularly true for information concerning the non-strategical supplier base. Moreover, the single members' joint efforts enable increased IPCs, ensuring that the newly attained information is processed in a cost-effective and timely manner, while likewise providing outcomes of suitable quality. These findings improve and broaden the theoretical understanding of the formation and outcome of sustainability-related SAs and contribute to the basis for future theoretical elaborations.

From a managerial perspective, the successful implementation of the investigated collaborative platform has shown that intra-industry SAs for joint SSRA are a valuable management tool, providing benefits for both founding and new members. As an SA member for joint SSRA companies benefit from horizontal SSRA sharing routines, which enable a higher overall efficiency in the SSRA of individual companies' supplier bases, as dual or multiple assessments of the same suppliers are eliminated within the SA. In general, the regular exchange between participating companies leads to an improved stakeholder management, as the SA's collective capability to identify and respond to the diverse and altering expectations or requirements of stakeholders is higher than the one of single members. Additionally, the joint efforts result in more comprehensive SSRAs as well as in assessment processes of higher robustness, which provide outcomes of higher quality. Finally, the active participation in the SA leads to a significantly higher SSRA coverage within the non-strategical supplier base, which would be difficult and cumbersome to achieve by individual efforts. All mentioned aspects positively support the subsequent sustainability-related risk mitigation efforts, as each member has recourse to a more informative and more robust foundation for the decision-making process. Nonetheless, managers need to be aware that the overall effectiveness of SSRM is still dependent on their own *ex ante* and *ex post* SSRA activities. These findings provide practice-oriented insights into the impact of sustainability-related SAs and a guidance for an effective SA management that may prompt companies to enter into existing or to form new sustainability-related SAs. However, the study has some limitations. Even if the case study approach is especially suited for exploratory research (Yin, 2014), this approach inherently possesses the difficulty of generalization. Thus, further empirical justification

is required to analyze whether the developed propositions can also be confirmed for respective alliances in other industries, as the nature of the chemical industry might have an influence on the results of the study. The strong environmental impact of the sector and a chain of scandals in the past have led to high stakeholder expectations and the resulting pressure on companies to undertake sustainability efforts. Moreover, the high industry-wide real net outputs as well as pronounced commodity purchasing routines add to the industry-specific setting. In addition, it would be interesting to investigate the motives of companies that refrain from entering into an intra-industry SA for joint SSRA, as our research focused on market participants that have consciously chosen to cooperate within an SA setting. In order to enrich the consideration of restraining factors for SSRA alliances, a further investigation of internal and external barriers (e.g. knowledge spillover regarding chosen suppliers, antitrust compliance, etc.) discussed or experienced by actual SA members is necessary. This research avenue may provide valuable insights for academia as well as managerial practice. However, the SA setting in its current form does not only affect the alliance members' SCM practices but also affects and influences the participating suppliers. Therefore, we recommend the examination of the work of such SAs from the suppliers' perspective, which would additionally create insights that would improve managerial practice. Overall, there are various promising avenues for qualitative as well as quantitative research on SAs for SSRA.

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