Alliance management capabilities in sustainability-oriented collaboration: problematization and new research directions

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SPECIAL ISSUE

Alliance management capabilities in sustainability-oriented collaboration: Problematization and new research directions

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Abstract

Sustainability-oriented collaboration, a heterogeneous set of formal interorganizational arrangements that vary considerably in size, membership, focus and functioning, but share the same interest in addressing sustainability challenges of public concern, is becoming a mainstay of corporate agenda setting. Yet, the more firms interact on social and environmental issues, the more the burdens and tensions of collaborating for sustainability become apparent. Research and practice increasingly question whether an alliance management capability (AMC) perspective can be adopted to explain variability in collaboration effectiveness. With the aim to investigate whether, and to what extent, existing sustainability-oriented collaboration research integrates or challenges mainstream theory on AMC, we adopt a problematization method to unpack the root assumptions underlying the AMC construct. We find that self-interest in economic value creation and capture, the need for homogeneity to favour knowledge accumulation and learning on alliance management, and predictable patterns of AMC deployment are consistently assumed by scholars to predict success in alliance management. Accordingly, we analyse AMC assumptions' current integration in the study of sustainability-oriented collaboration, conducting a systematic literature review on collaborative capabilities developed for, during and in response to sustainability challenges. In so doing, we identify what distinguishes sustainability-oriented collaboration from mainstream strategic alliances and the related implications on the collaborative capabilities firms should develop and deploy when dealing with sustainability challenges. We elaborate on these and their implications for AMC constructs to provide a future research agenda, which integrates further theoretical perspectives and broadens the scope of existing ones.

INTRODUCTION

With mounting evidence of the failure of siloed approaches in light of the systemic nature of grand challenges such as climate change, poverty and human rights, the claim that sustainability is a collaborative space has grown in popularity (de Bakker et al., 2019), motivating firms in a tireless search for partnering opportunities (Niesten & Jolink, 2020).

A vast array of formal interorganizational arrangements has emerged over the last two decades, with great diversity in type, size, membership, focus and functioning, but with a shared interest in collaboratively addressing social and environmental issues (Wassmer et al., 2014). Green alliances, cross-sector social partnerships, social partnerships and multi-stakeholder initiatives have become the most recurring terms in the management literature, referring to collaborative approaches where firms join in partnership with an explicit social and/or environmental intent, in addition to the conventional economic and competitive purpose (Ordonez-Ponce et al., 2021; Van Tulder et al., 2016). We broadly refer to such collaborative approaches as *sustainability-oriented collaboration*.

Initial enthusiasm for the promises of sustainability-oriented collaboration and eagerness to be involved have been steadily curbed by evidence of the complexity of successfully managing and maintaining them (Caldwell et al., 2017; Kolk et al., 2008). With the intent to support theory and practice in identifying and overcoming the burdens and tensions related to partnering for sustainability, recent research has started to call for the integration of a capability perspective (Al-Tabbaa et al., 2019; Menghwar & Daood, 2021; Niesten & Jolink, 2020). In particular, the construct of alliance management capability (AMC), defined as the ability to capture, share and deploy alliance management know-how accumulated via prior experience or through purposeful investments (Kale et al., 2002), has been borrowed from the mainstream strategic alliance literature with the aim to better explain the variability in effective sustainability-oriented collaboration.

While advocating for a stronger integration of AMC to advance the theory and practice of sustainability-oriented collaboration, these studies also question its universal applicability in light of the specificities of collaborating on sustainability. In fact, compared to mainstream strategic alliances (i.e., collaboration between two or more firms, who share resources or exploit complementarities to mitigate risks or explore new business opportunities; Ireland et al., 2002), sustainability-oriented collaboration tends to mobilize varied resources and involve more diverse partners, including governments and nonprofits, to achieve an interwoven set of environmental, social or political goals which typically transcend the boundaries of the partnership itself (de Bakker et al., 2019). Thus, these differences invite a deeper reflection on the underlying assumptions and the extent to which they pertain when interorganizational relationships target sustainability goals (Lin & Darnall, 2015).

Motivated by emerging findings on the differences between strategic alliances and sustainability-oriented collaboration, our paper aims to investigate the theoretical challenges of extending existing theories currently used in the AMC literature to the sustainability context. To this end, we apply problematization to first identify the root assumptions underlying existing AMC theories (Alvesson & Sandberg, 2011). We find that self-interest in economic value creation and capturing, need for homogeneity in partner selection to favour knowledge accumulation and learning on alliance management, and predictable patterns of AMC deployment are consistently assumed by scholars to predict success in alliance management.

Then we elaborate on whether, and how far, these AMC assumptions could be extended to sustainability-oriented collaboration. In particular, we follow a systematic literature review protocol to search, collate and synthetize extant research on capabilities developed for, during and in response to sustainability-oriented collaboration (Breslin et al., 2020). We content analyse each article to understand whether and why mainstream AMC assumptions on economic self-interest, need for homogeneity and predictable deployment are explicitly challenged. Additionally, when challenges are present, we record any suggested alternative capability or theoretical perspective.

Our contribution to the literature is threefold. Firstly, by integrating a capability-based lens in the study of sustainability-oriented collaboration, we show that the AMC construct is still needed in the context of sustainability-oriented collaboration to explain variability in collaborations' effectiveness. Yet, its applicability has to account for the extent to which sustainability-oriented collaboration presents: (1) *goal complexity and value multiplicity*; (2) *purposeful search for partner heterogeneity*; and (3) *limited predictability and porousness of the collaboration*. Thus, we contribute to the growing literature on the changing nature of alliance-related capabilities when facing complex, unpredictable and multi-various challenges (He et al., 2020). Secondly, we show how a systematic literature review approach can be combined with problematization to assess a field's assumptions in light of their applicability in other contexts (Alvesson & Sandberg, 2020). Finally, this study provides a systematic overview of the specificities of sustainability-oriented collaborations and related implications on the capabilities currently associated with them, a topic on which the current literature is mostly fragmented.

The remainder of the paper is structured as follows. First, we present an overview of the emergence of sustainability-oriented collaboration as a distinct subfield of management research. Second, we detail the methodology followed to unpack AMC assumptions and perform a systematic literature review. Third, we elaborate on the key differences between sustainability-oriented collaborations and conventional alliances, and identify alternative capabilities proposed by existing research in response to the specificities of sustainability-oriented collaboration. Finally, we present a research agenda on opportunities for the extension of the mainstream AMC construct.

THE RISE OF COLLABORATION FOR SUSTAINABILITY

The earliest forms of collaboration around sustainability can be traced back to the 1992 United Nations Conference on Environment and Development, in which a wide variety of coalitions and initiatives emerged (United Nations, 1993), along with public recognition of sustainability as a particular task for those interested in addressing it (UNDESA, 2015). More recently, the 2030 Agenda for Sustainable Development stated partnerships for sustainability, within and across sector boundaries, as a global goal to mobilize human expertise, knowledge, financial and technological resources (Beisheim & Simon, 2018).

In this context, recent debate is placing greater emphasis on those aspects that enhance the effectiveness of such collaborative agreements (de Bakker et al., 2019). As value is no longer expected to be created in isolation by firms, but in collaboration with partners and stakeholders (Jastram & Klingenberg, 2018), emerging research has started to question whether collaboration-related capabilities can act as drivers of fruitful corporate participation (Alonso & Andrews, 2019).

Traditionally, the literature on strategic interfirm collaboration has referred to AMC—defined as the ability of firms to capture, share, store and deploy knowledge, experience and learning related to alliance management (Kale & Singh, 2007; Kale et al., 2002)—to explain why some firms achieve better performance than others from alliances (Ireland et al., 2002). Through the development and deployment of AMC, partners are better equipped to reap the benefits of collaboration, while achieving collective goals (Wang & Rajagopalan, 2015). In fact, AMC supports firms in setting targets and implementing tasks over the course of the alliance, in becoming more integrated with partners through the development of appropriate alliance agreements and structures, and in acquiring and exchanging knowledge with the partners involved (Niesten & Jolink, 2015).

Apart from a few recent attempts (Al-Tabbaa et al., 2019; Inigo et al., 2020; Wójcik et al., 2022), the study of capabilities to manage sustainability-oriented collaboration makes no, or only partial, reference to AMC studies (Alonso & Andrews, 2019; Liu et al., 2018). Even in those cases where AMC is explicitly referred to as a driver of successful participation, the focus is either on the study of collaboration that resembles traditional interfirm alliances (Aboelmaged & Hashem, 2019) or on the challenges related to the transferability of AMC to collaborations involving partners from different sectors (i.e., non-profit organizations or governments; Murphy et al., 2012). This opens a quest for further understanding of the reasons underpinning the still limited integration of the two streams of literature, and suggests that more effort is required to identify whether, and under what circumstances, the AMC construct can be transferred or extended to the context of sustainability-oriented collaboration.

METHODOLOGY

Guided by the aim of investigating the extent to which mainstream AMC theory can be extended to the context of sustainability-oriented collaboration, we integrated problematization with a systematic literature review of the capabilities firms develop when collaborating for sustainability. Problematization is a methodology for generating research questions through challenging and dialectically interrogating implicit and explicit assumptions held in a given literature or academic field (Alvesson & Sandberg, 2011). Its application derives from the selection of a specific domain of literature as a precondition to identify and articulate underlining theoretical assumptions. Such assumptions are evaluated and potentially challenged against an emerging phenomenon or theory that questions their validity and explanatory potential. This process leads to the development of alternative assumptions, which are evaluated in terms of their likelihood to generate new theories or agendas for future research with regard to intended audiences.

We first selected and analysed seminal contributions in the AMC literature to identify the root assumptions. Then, we relied on such assumptions to content analyse the literature on capabilities in sustainability-oriented collaboration. Accordingly, we retrieved relevant articles by applying a systematic literature review protocol, and analysed each article to identify whether one or more AMC assumptions were explicitly challenged when confronted with the specificities of managing sustainability-oriented collaboration. In so doing, we developed a research agenda pointing to the conditions under which the AMC literature should be integrated. The process we followed is detailed below.

Stage 1: Identification of AMC assumptions

Given our interest in unpacking AMC assumptions, we went through the following steps. First, we identified the boundaries between the AMC field and other bodies of the literature advancing a capability perspective of strategic alliances. The existing literature is explicit on the fact that learning in the alliance context is of different types (Dyer & Singh, 1998). Indeed, AMC strictly relates to how firms learn to manage alliances and is recognizably different from how firms learn from alliances (Hoang & Rothaermel, 2005). AMC can be regarded as a set of skills, routines and organizational artefacts deliberately developed to support firms in handling the complexity of the alliance process (Schilke & Goerzen, 2010).

Further to the definition of the boundaries around the AMC field, we focused on sorting and delimiting existing studies in the AMC-specific domain of the literature. According to the problematization approach, we were less concerned with covering all possible studies underlying the field development (Alvesson & Sandberg, 2011). Instead, we selected key scholarly contributions that have played a role as path-defining studies in the domain of AMC. Our selection was based on the procedure followed by Niesten and Jolink (2015) and Kohtamaki et al. (2018) to identify articles on alliance-related capabilities developed and deployed by firms in interorganizational collaborations. We searched for articles published between 1998 and 2021, starting from the one by Dyer and Singh (1998), which is commonly referenced as the first article to examine AMC specifically (Niesten & Jolink, 2015). We used the keywords included in Appendix 1. We ended up with 1241 articles, from which we selected studies in journals ranked at grades 3, 4 or 4* in the Chartered Association of Business Schools (CABS) academic journals list (Zahoor et al., 2020). The number of selected articles was hence reduced to 306. Subsequently, we restricted our sample to articles published before the publication of the first extensive reviews focusing on AMC (Niesten & Jolink, 2015; Wang & Rajagopalan, 2015). This further reduced the number of studies to 254. As our aim was to focus on the most influential articles to identify theoretical assumptions, we ordered them according to the total number of received citations and selected the top 25%. We reviewed these articles to eliminate those where AMC was not the core of the research question. We also excluded articles that extended previous research to different contexts (e.g., articles focusing on the effect of capabilities in the context of a vertical relationship). Finally, we complemented the list with articles that did not result from the Scopus search but were considered seminal to the development of AMC theory (Kale et al., 2000; Simonin, 1997; Zollo et al., 2002). We further validated our list of 16 influential studies by comparing it with studies considered influential by six summaries of the literature on firm capability for strategic alliance management (He et al., 2020; Kohtamaki et al., 2018; Niesten & Jolink, 2015; Parmigiani & Rivera-Santos, 2011; Salvato et al., 2017; Wang & Rajagopalan, 2015). The list of seminal articles is presented in Table 1.

We analysed the seminal contributions, aiming to identify and articulate the underlying AMC field assumptions. According to Alvesson and Sandberg (2011), field assumptions can be so embedded in research that they are mostly only implicit. For this reason, we retrieved explicitly stated assumptions and referred to the relative theoretical schools underpinning common conceptualizations across studies when assumptions were not explicitly stated. As an example, Kale et al. (2002, p. 747) refer to evolutional economics (Nelson & Winter, 1982), assuming that AMC can be cumulated over time as alliance tasks tend to be repetitive and predictable. To identify the assumptions, we first analysed the definitions of AMC and abstracts of the selected seminal contributions to search for commonalities in terms of objectives, AMC content, antecedents and consequences (Niesten & Jolink, 2015). This procedure also allowed us to spot what each specific school of thought addressing AMC, such as the dynamic-capability view or the resource-based view of a firm, had in common regarding conceptualization of the construct, the dynamics behind its emergence and the mechanisms through which AMC was deployed. As explained below, we identified three common field assumptions. Then, we went back to the whole list of articles on alliance-related capabilities to investigate whether this common ground was still in operation. We selected the most recent articles published after the extensive summary articles on AMC by Niesten and Jolink (2015) and Wang and Rajagopalan (2015). This resulted in 52 articles, published between 2015 and June 2022, and confirmed the persistence of the assumptions.[1]

Stage 2: Assumption challenging

With the intent to investigate the extent to which mainstream AMC assumptions are integrated or challenged in the context of sustainability-oriented collaboration, we performed a systematic review of the literature on capabilities developed or deployed by firms to manage collaboration on sustainability issues. We relied on the protocol defined by Tranfield et al. (2003) and applied

[1] Notable exceptions are the studies by De Silva and Rossi (2018), Liu et al. (2018), Zaoual and Lecocq (2018), Al-Tabbaa et al. (2019), Gölgeci et al. (2019), Inigo et al. (2020) and Donbesuur et al. (2021), which investigated AMC in non-profit or public sector organizations and provided emerging evidence on the need for an extension of the research on AMC.

TABLE 1 List of articles to identify the assumptions of the AMC literature

	Reference	Total citations reported by Scopus	Focus of the article	Outcome	Type of article	Theories
1	Simonin (1997)	586	Antecedents and mechanisms	Firm level	Empirical	DCV, OL, RBV
2	Dyer and Singh (1998)	6676	Mechanisms	Alliance level	Theoretical	RV
3	Kale et al. (2000)	1829	Mechanisms	Firm level	Empirical	DCV, TCE, RV
4	Anand and Khanna (2000)	1030	Antecedents	Firm level	Empirical	OL, KBV, TCE
5	Sivadas and Dwyer (2000)	639	Mechanisms	Alliance level	Empirical	DCV, OL
6	Zollo et al. (2002)	681	Antecedents	Firm level	Empirical	DCV, TCE, EE
7	Ireland et al. (2002)	831	Mechanisms	Alliance level	Theoretical	DCV, OL, TCE, RBV, SNT
8	Kale et al. (2002)	1032	Antecedents	Firm level	Empirical	DCV, OL, EE, RBV
9	Draulans et al. (2003)	173	Antecedents	Alliance level	Empirical	DCV, EE, RBV
10	Hoang and Rothaermel (2005)	472	Antecedents	Alliance level	Empirical	DCV, OL
11	Rothaermel and Deeds (2006)	410	Antecedents	Firm level	Empirical	DCV
12	Kale and Singh (2007)	626	Mechanisms	Firm level	Empirical	DCV, KBV
13	Luo (2008)	152	Mechanisms	Alliance level	Empirical	DCV, JT
14	Schreiner et al. (2009)	295	Mechanisms	Alliance level	Empirical	DCV
15	Kale and Singh (2009)	394	Antecedents and mechanisms	Firm level	Theoretical	DCV, KBV
16	Schilke and Goerzen (2010)	234	Mechanisms	Firm level	Empirical	DCV

DCV = dynamic capability view; OL = organizational learning; RBV = resource-based view; RV = relational view; TCE = transaction cost economics; KBV = knowledge-based view; EE = evolutionary economics; SNT = social network theory.

in recent sustainability management literature (Niesten & Jolink, 2020; Schaltegger et al., 2022). The process followed to identify the publications is outlined in Figure 1.

First, we relied on existing literature reviews on sustainability-oriented collaboration, corporate sustainability and AMC to generate a comprehensive list of keywords to search relevant articles from high-impact journals (Mura et al., 2018; Niesten & Jolink, 2020; Schaltegger et al., 2022; Vogel et al., 2022). As the literature on sustainability-oriented collaboration is still emerging, we did not restrict our search to specific subject categories or pre-defined time frames. To identify relevant documents relating to sustainability-oriented collaboration, we defined a string that combined several search terms and criteria (see Appendix 2), applied to the titles, abstracts and keywords of research articles included in Scopus. We also restricted our search to higher-ranked journals (Zahoor et al., 2020). This search yielded 2856 articles published up to June 2022.

We screened and selected articles based on their alignment with the goal of the paper (i.e., investigating whether and to what extent AMC theory can be extended to the study of sustainability-oriented collaboration involving firms). We excluded 2605 articles from the initial sample, as they were completely out of scope (e.g., articles where sustainability was referred to as longevity or duration). Then, we went through abstract and full-text analysis to exclude articles where: (i) sustainability-related issues (social and/or environmental) were not central to the article contribution; (ii) firms were not involved in the collaboration (e.g., non-profit–government alliances); (iii) reference to participants' capabilities or functioning of the collaboration was absent or only marginal. After data cleaning and adjustments, we ended up with 104 articles. Following in-depth reading of the 104 articles and their references, we manually added four articles which did not match our search strings. The final sample consisted of 108 high-quality peer-reviewed studies (see Appendix 4).

As shown in Figure 2, 76.7% of articles were published from 2012, indicating the relatively emerging character of the research on capabilities in the context of sustainability-oriented collaborations.

The articles presented heterogeneous methodologies, with 67% qualitative and 16% quantitative studies. The remaining 17% of selected articles could be classified as conceptual. As shown in Appendix 3, 50% of the articles had been published in three journals: *Journal of Business Ethics* (27%), *Business and Society* (13%) and *Business Strategy and Environment* (10%). The CABS category Ethics, CSR and Management accounted for 56% of the articles in our sample. The first comparison between these studies and AMC articles concerned the perspective assumed by the authors. AMC research mainly adopted an actor perspective and analysed AMC emergence or deployment assuming a firm standpoint. On the contrary, articles in the

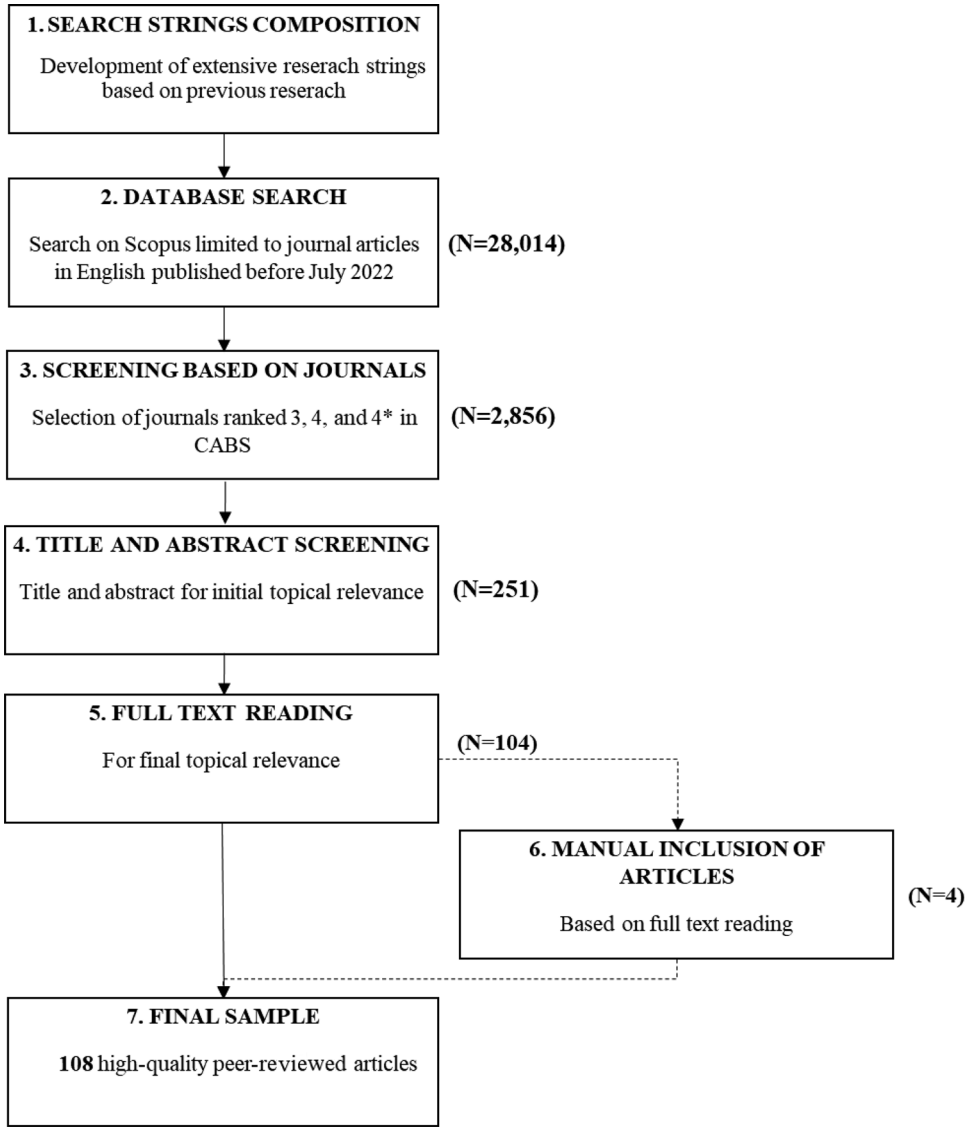

FIGURE 1 Summary of the Systematic Literature Review (SLR) search and screening process.

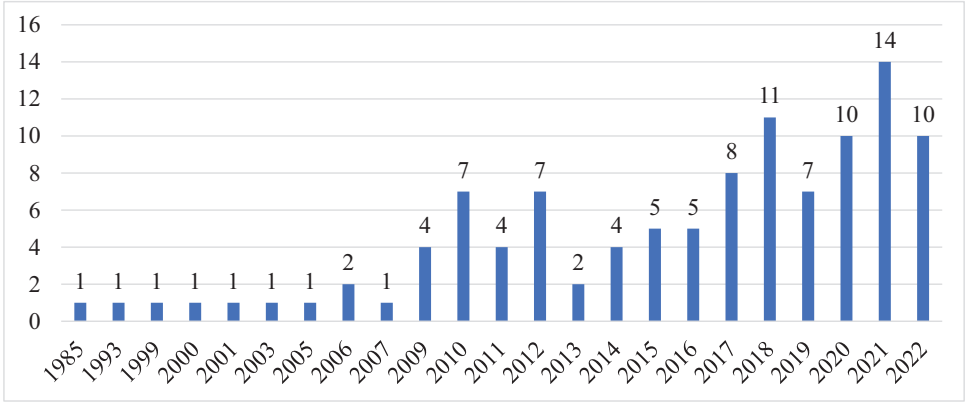

FIGURE 2 Distribution of the publications included in the SLR over time (1985–2022). [Colour figure can be viewed at wileyonlinelibrary.com]

sustainability-oriented collaboration sample were more heterogeneous: 35% of studies assumed the partnership perspective and 12% combined the partnership and the actor perspective. The remaining articles assumed an actor perspective (e.g., firm, non-governmental organization (NGO), state).

Finally, we based our extraction and *synthesis* of the relevant information on a content analysis of the selected articles, which was meant to identify overlaps with the mainstream AMC literature and new research opportunities in the study of capabilities for managing sustainability-oriented collaboration. In particular, we content analysed each article first to identify the specificities of the collaboration in relation to mainstream strategic alliances, and then to evaluate the extent to which AMC root assumptions were integrated or challenged in the context of sustainability-oriented collaboration. This allowed us to discuss the contexts where a traditional capabilities approach applies or needs to be extended, as well as the new theoretical perspectives to be integrated.

By bridging the established assumptions and emerging dynamics, we outlined a research agenda, which integrated further theoretical perspectives and broadened the scope of existing ones.

FINDINGS

We first present the main assumptions guiding AMC literature development, resulting from the problematization of seminal AMC articles. Second, we analyse the theoretical challenges of translating existing AMC assumptions to the sustainability context. In so doing, we elaborate on whether and under which conditions the AMC construct needs to be extended to new capabilities required to support firms in collaborating for the achievement of sustainability targets.

Unpacking AMC assumptions

In this section, we discuss our findings relating to the three mainstream field assumptions we identified. They are summarized in Table 2, with examples from seminal and recent AMC literature.

Self-interest in economic value creation and capturing

AMC research has emerged to explain why and how some firms are more successful than others in managing interfirm strategic alliances. Initially conceived as collaborative know-how developed through experiential learning in identifying, managing, monitoring and terminating alliances (Simonin, 1997), the AMC construct has evolved over time to include a whole set of deliberate decisions drawing inferences from successful experiences at managing alliances, and storing and retrieving such purposeful learnings with the expectation of achieving superior performance (Anand et al., 2016). While consistently conceiving AMC as a dynamic capability (Niesten & Jolink, 2015), scholars have studied how firms develop and deploy knowledge and skills to coordinate alliance-related activities, properly communicate and convey relevant information, and develop bonding mechanisms to reduce uncertainty and risks over the entire life cycle of an alliance (Schreiner et al., 2009).

Either focusing on the role of experience and tacit learning mechanisms (Anand & Khanna, 2000), or on deliberate codification of alliance know-how (Zollo et al., 2002), seminal contributions on AMC have converged on considering it a source of competitive advantage (Ireland et al., 2002). This derives from conceiving economic value and performance as the ultimate goal of strategic alliances, which has been consistently maintained over time (Ryan-Charleton et al., 2022), rooted in the resource-based view (RBV) of the firm and the competitive potential of dynamic capabilities (DCV) (Barreto, 2010; Laaksonen & Peltoniemi, 2018). Accordingly, AMC studies consider performance implications for strategic alliance partners by analysing the effect of AMC in terms of variation in financial performance (Findikoglu & Lavie, 2019), additional knowledge or resources deriving from the alliance (Subramanian et al., 2018), or results achieved at the alliance level (Hoang & Rothaermel, 2005).

This allowed us to identify self-interest in economic value creation and capture from the alliance as the first common assumption expected to drive a firm's behaviour in developing or deploying AMC. When firms choose to accumulate experience from previous alliances, they tend to select and store learning, leading to performance improvement (Anand et al., 2016). The self-interest assumption manifested itself in the studies, which clarified how AMC led to superior economic performance (Hitt et al., 2000) (i.e., when it allows the parties involved to develop and transfer knowledge, which translates into a market opportunity), while concurrently reducing coordination and integration costs, which could put partners at risk of losing competitiveness (Ireland et al., 2002). The presence of such an assumption is evident in empirical studies proposing a positive linear relation between AMC and firm performance. Even when the dark side of excessive AMC accumulation is acknowledged, drawbacks are discussed in light of diminishing returns on firm economic performance (Findikoglu & Lavie, 2019; Hottenrott & Lopes-Bento, 2015).

TABLE 2 Field assumptions in the AMC literature

ASSUMPTION 1		Examples from seminal articles	Examples from recent articles
Self-interest in economic value creation and capturing	The goal of strategic alliances is to gain an economic return for the firms involved in the alliances	-The idea that alliances are an important vehicle for value creation is supported by studies suggesting that, on average, alliances do create economic value (Kale et al., 2002, p. 747). -A firm can enjoy a significant competitive advantage over its peers or rivals if it can achieve greater overall alliance success (Kale & Singh, 2007, p. 982). -We offer a relational view of competitive advantage that focuses on dyad/network routines and processes as an important unit of analysis for understanding competitive advantage (Dyer & Singh, 1998, p. 661). -Strategic alliances are cooperative arrangements between two or more firms to improve their competitive position and performance by sharing resources (Ireland et al., 2002, p. 413). -This paper examines the performance of strategic alliances—defined as cooperative agreements of any form aimed at the development, manufacture and/or distribution of new products (…) (Zollo et al., 2002, p. 701). -By examining project-level new drug development outcomes between established pharmaceutical companies and their biotechnology partners (…) (Hoang & Rothaermel, 2005, p. 332).	- In this study, we challenge the assumption that coopetition experience is invariably beneficial and propose a contingency view on the relationship between coopetition experience and firm profitability (Estrada & Dong, 2020, p. 2). - Strategic alliances are cooperative arrangements between two or more firms, who share reciprocal inputs to realize improved competitive performance by sharing resources, while maintaining their own corporate identities (O'Dwyer & Gilmore, 2018). - (…) we measured each small firm's learning effect based on the extent to which the firm cited its partner's patents post-alliance (Subramanian et al., 2018, p. 162). - Franchisor performance includes three items that ask about growth in sales, profitability and market share relative to competitors (Gillis et al., 2020). - (…) c (Yang et al., 2015, p. 362). - To measure the economic value gained from an alliance, we used the event study methodology to extract abnormal stock market returns following new alliance announcements during the time period 1999–2001 (Liu & Ravichandran, 2015, p. 516).

(Continues)

TABLE 2 (Continued)

ASSUMPTION 2		Examples from seminal articles	Examples from recent articles
Need for homogeneity to favour knowledge accumulation and learning on alliance management	Effective management of strategic alliances is achieved when partners share similarities or the partnership has characteristics for which previous experience is valuable	- To ensure a sufficient homogeneity of the research domain, we followed the approach by Eisenhardt and Schoonhoven (1996) by focusing our empirical analysis on companies' R&D alliances (Schilke & Goerzen, 2010, p. 1201). - (…) as an alliance form, joint ventures show greater similarity in terms of structure, design and governance issues across different situations (which makes it possible to transfer learning) as compared to contractual nonequity alliances (Kale & Singh, 2009, p. 54). - (…) the ability of the pharma firm to learn from the biotech firm depended on the similarity of both firms' dominant logics, knowledge bases, as well as their organizational structures and compensation policies. The greater the similarities in these areas, the more effective the knowledge transfer, even if the knowledge was more tacit in nature (Sivadas & Dwyer, 2000, p. 32).	- (…) by providing empirical evidence that organizational compatibility represents a driver of interorganizational interaction quality, this study contributes to a better understanding of how interorganizational similarity facilitates the creation of relational rents from complementary assets (Leischnig et al., 2014, p. 1050). - Although the information that partners share in an alliance can be quite diverse, most partners must share certain similar types of information during the life cycle of the alliance (Niesten & Jolink, 2015, p. 78). - An initial increase in technological distance is argued to improve interfirm learning by increasing novelty value, but beyond a moderate level, the effect of technological distance will become negative due to the lack of relative absorptive capacity that is essential for successful learning (Subramanian et al., 2018).

(Continues)

TABLE 2 (Continued)

ASSUMPTION 3		Examples from seminal articles	Examples from recent articles
Predictable patterns to AMC deployment	Strategic alliances are conceived as a sequential process in which each phase terminates when the previous one ends	- (…) to realize the expected benefits, firms must also proactively manage an evolving entity such as an alliance after [in italics in the original text] it is up and running (Kale & Singh, 2009, p. 48). - According to this view, as an alliance unfolds, success at the operational level is achieved by dynamically adapting and fine-tuning the relationship process in favourable ways (Schreiner et al., 2009, p. 1396). - We focused on bilateral dyadic R&D alliances based on formal interfirm agreements; data are more readily available for these formal alliances than they are for informal collaborations like handshake deals (Hoang & Rothaermel, 2005, p. 335). - It is useful to think of collaborative know-how along the following four fundamental phases collaboration cycle (…) (Simonin, 1997, p. 1154). - Repeated engagements in strategic alliances allow the firm to create codified routines, policies and procedures as well as tacit knowledge with respect to the entire range of alliance management, beginning with partner selection and alliance formation to alliance management and finally alliance termination (Rothaermel & Deeds, 2006, p. 438).	- Dedicated alliance units and roles may initially increase alliance administrative costs, but in the long run may contribute to lower overall costs and higher value from partnering, if their specialization contributes to better preventing coordination failures, resolving partner conflict and streamlining identification, formation and management of alliances (Albers et al., 2016, p. 598). - (…) the presence of well-defined procedures and actions to be taken during the different phases of the alliance life cycle might guide the decision-making process, especially in conditions of high uncertainty due to unfamiliar and thorny issues (Russo & Vurro, 2019, p. 728). - Thus, a firm that understands coopetitors' knowledge can leverage its experiences in such activities to build up effective routines for partner selection, coordination and bonding in coopetition (Estrada & Dong, 2020, p. 7). - Learning to manage alliances is largely influenced by a firm's prior alliance experience, which helps the firm understand the critical issues involved in an alliance life cycle. These critical issues include selecting the appropriate firms to ally with, governing alliance activities effectively and resolving conflict situations (…) (Liu & Ravichandran, 2015, p. 512).

Need for homogeneity to favour knowledge accumulation and learning on alliance management

AMC development and deployment has mostly been studied in the context of strategic agreements between firms operating in specific sectors (Kale & Singh, 2007), or in the context of vertical relationships (Lorenzoni & Lipparini, 1999). Learning how to manage alliances has emerged as particularly relevant to cope with the intrinsic ambiguity of interfirm collaboration. Yet, for such capabilities to be developed and properly retrieved when needed, it is expected that firms favour similar partners to distil management lessons from their experiences and diffuse them inside the organization (Draulans et al., 2003). Thus, scholars tend to assume the need for homogeneity in partnering composition to facilitate know-how accumulation and its subsequent deployment in situations that resemble those where lessons were learned (Rothaermel & Deeds, 2006).

According to the mainstream literature, AMC emerges and is successfully deployed when partners share similar dominant logics, knowledge bases, organizational structures and incentive systems (Hill & Rothaermel, 2003). This assumption is also implicitly stated by discussing how AMC contributes to alliance success, promoting shared understanding and commitment on mutual benefits (Fainshmidt et al., 2016) in contexts such as innovation development or new market-entry strategies. Indeed, all the parties involved in these interfirm collaborations tend to consider the alliance as an opportunity for improved competitiveness. Recent research on the performance consequences of AMC has confirmed homogeneity in alliances as conducive to the development of superior alliance management skills. Especially, in settings characterized by a higher level of complexity, such as collaborative R&D settings, deliberate investments can create common ground and shared understanding on the most beneficial ways to collaborate (Feller et al., 2013). Yet, scholars have started to question whether accumulation through repetitiveness represents a source of inertia and rigidity (Bicen et al., 2021). Less is said about how AMC can develop and be deployed to accomplish its tasks, regardless of partners' similarity.

Predictable patterns to AMC deployment

Finally, AMC research is built on a simplistic view of the world in which the characteristics of the strategic alliance, as well as those of the actors involved, are clearly defined in terms of objectives, duties and activities. Even recognizing variability in the ability of firms to benefit from AMC based on context characteristics or partners' attributes (Wang & Rajagopalan, 2015), seminal contributions assume that AMC emergence and deployment follow predictable patterns where partners accumulate knowledge and experience, to be retrieved when needed, given certain targets (Hoang & Rothaermel, 2005). This assumption remains, as the AMC literature still tends to investigate the construct along the different linear phases of the alliance life cycle (Albers et al., 2016; Doz, 1996).

Beyond predictable linearity, both seminal contributions and the recent literature tend to analyse AMC taking for granted partners' intention to collaborate, whose commitment leads to AMC development and deployment to extract returns from the alliance (Kale et al., 2001). Even when AMC is acquired tacitly via alliance experience accumulation, it needs to be purposefully codified, stored and properly used to extract the full benefits (Anand & Khanna, 2000). This tenet derives from the dynamic capability view (DCV) according to which AMC can be considered as a dynamic capability that works in favour of alliance routines' adaptation to changing partners, contexts and dynamics (Reuer et al., 2002). Once partners join in collaboration, that deployment occurs along with the deliberate search for returns on AMC (Schreiner et al., 2009). Based on this evidence, we define the third assumption as predictable patterns to AMC deployment, where intended aims, expectations and alliance boundaries are considered as static or taken for granted.

The arguments above show how the AMC literature has been articulated around a set of assumptions that might threaten the relevance of its findings as the dynamicity and complexity, which increasingly characterize contexts and related collaboration opportunities, increase. Only recently, a call has emerged to extend AMC beyond its traditional domain of strategic business alliances and account for emerging sustainability-oriented business ecosystems and new forms of partnerships (Al-Tabbaa et al., 2019; He et al., 2020). This suggests that more effort is required to integrate AMC in the study of sustainability-oriented collaboration, to outline a research agenda and enrich our current understanding.

Extending AMC to the sustainability context: Current integration and challenges

The unpacking of AMC assumptions was followed by a systematic literature review to uncover whether, and to what extent, the AMC construct was integrated in or challenged by studies on the capabilities firms must develop

to fruitfully collaborate on sustainability challenges. When reviewing the selected articles, we first classified them according to whether they were diverging from mainstream assumptions underpinning the AMC construct in strategic alliances. When divergence was present, we analysed whether this was related to specific characteristics of the sustainability-oriented collaboration and related implications on the capabilities of participating firms.

All in all, the literature we reviewed points to three major differences between sustainability-oriented collaborations and interfirm strategic alliances, which had an impact on the capabilities required for effective collaboration. Differences relate to the outcome, composition and functioning of the collaboration.

As for outcome, 62% of the reviewed studies identified *goal complexity and value multiplicity* as key distinguishing traits of collaborating on social and/or environmental challenges. Regardless of participants' individual interests, sustainability-oriented collaboration aimed to achieve overarching, higher-order goals of public interest, considered a major challenge to be managed when taking part. Such collaborations tend to emerge with the intention of achieving impacts that span beyond the boundaries of the collaboration itself and into wider society (Pedersen et al., 2021).

Sustainability-oriented collaboration also tends to diverge from strategic alliances in terms of the *composition of the partners involved*. Most of the articles analysed in the review (74%) explicitly considered the heterogeneity of the partners involved in the collaboration as a key characteristic of collaborating for sustainability. The multiplicity of the actors involved is common when dealing with issues that transcend sector boundaries, such as climate change or societal issues, and requires heterogeneous knowledge, skills and resources. In fact, sustainability challenges encompass a range of interconnected systems and the consideration of a multitude of factors across local, national and international scales (Howard-Grenville et al., 2014). Most challenges are characterized by extreme institutional complexity, which often leads to incompatible goals, problems with agenda setting and prioritization for all the parties involved.

Finally, the *functioning of sustainability-oriented collaboration* tends to be characterized by limited predictability along the entire life cycle of the collaboration, from partner selection to concerted action and expected monitoring of the results. Sustainability challenges share a high complexity, as the causes behind those challenges are often generated by interconnected systems, sectors and actors. Additionally, approaches to solve them might vary and are not necessarily straightforward, with consequences that are difficult to predict within a reasonable degree of certainty; in turn, related outcomes can generate unexpected impacts on the actors involved. The literature illustrates that sustainability-oriented collaborations can be extremely porous and dynamic (Voegtlin & Pless, 2014), because of the intrinsic complexity and uncertainty about premises, preferred patterns and outcomes that typically characterize sustainability challenges.

In light of the specificities of partnering for sustainability, existing research explicitly questions the transferability of mainstream capability constructs (e.g., Al-Tabbaa et al., 2019; Pittz & Intindola, 2015), while calling for the development of specific competences (e.g., Henry et al., 2022; Koschmann et al., 2012). In fact, only 25% of the articles analysed refer explicitly to mainstream alliance management capabilities or related constructs (e.g., experience, learning or coordination). The vast majority of the sustainability-oriented collaboration articles (87%) focused on the mechanisms or routines deployed by actors involved in collaboration, or by the partnership itself, to achieve the goals of the collaboration. Moreover, compared to mainstream AMC studies, research on management capabilities for sustainability-oriented collaboration incorporates a larger set of theories, including stakeholder theory (Dentoni et al., 2016), behavioural theory (Feilhauer & Hahn, 2021), paradox theory (Henry et al., 2022), resource dependence (den Hond et al., 2015), institutional theory (Vogel et al., 2022) and narrative theory (Koschmann et al., 2012). Such theories are referred to by authors to complement those commonly used by mainstream AMC studies or to substitute them, when the specificities of sustainability-oriented collaboration are very pronounced in terms of goal multiplicity, heterogeneity of the partners involved and limited predictability. The implications of these specificities on collaboration management capabilities are elaborated below, based on content analysis of the selected articles.

Goal multiplicity and the need for a selflessness orientation

Participants in a sustainability-oriented collaboration are often required to invest their own resources to achieve multiple, concurrent goals—namely social, environmental and economic targets—to benefit society at large. This poses an immediate challenge, on what exactly constitutes collaboration success, and on what basis it is possible to evaluate the effective management of the collaboration (Ahmadsimab & Chowdhury, 2021). While in the mainstream AMC literature, alliance know-how is directly inferred from the existence of return on a firm's competitiveness, the achievement of social or environmental targets limits firms' decision-making regarding, for example, over-exploitation of natural resources to

support certain performance expectations. This, in turn, might reduce competitiveness, at least in the short term (Grewatsch et al., 2021). Sticking to mainstream assumptions can thus hinder the development of appropriate collaboration capabilities. In fact, lower levels of economic returns resulting from sustainability-oriented collaboration would be immediately considered a signal of suboptimal collaboration know-how. Indeed, mechanisms are required to encourage the attainment of collective goals, by cultivating a selflessness orientation while at the same time crafting space for the achievement of individual benefits (DiVito et al., 2021).

Additionally, as sustainability-oriented collaborations are intended to benefit the public good, partners are often not only expected to contribute to achieving the partnership target, but must also be open to transferring successful experiences to other contexts (Kolk & Lenfant, 2015). This further exacerbates the appropriability problem intrinsic in the value-capturing expectations, as firms invest private resources for solutions that need to be openly disseminated. It also requires changes in returns expectations, as well as a thorough awareness of the specificities of the context in which the partnership occurs or needs to be extended (Pinkse & Kolk, 2012).

Finally, the more sustainability challenges require collective action, the more difficult it is to clearly attribute outcomes to a partner, or to isolate each partner and the entire partnership effect from other dynamics occurring concurrently (Feilhauer & Hahn, 2021; Van Tulder & Keen, 2018). This might engender conflicting expectations about appropriate collaborative behaviour, creating incentives for social loafing or increasing uncertainty about what to expect from participation if an orientation towards self-interest prevails (Marques, 2017).

Complex challenges and deliberate search for heterogeneity

The more complex the social and environmental problems, entailing interactions and interdependencies characterized by conflicting views about preferred patterns under high levels of uncertainty, the more their solution requires the development and implementation of a system perspective where multiple, heterogeneous actors are involved (Ferraro et al., 2015). Heterogeneity of the actors involved in sustainability collaboration is not only a consequence of the inherent nature of sustainability challenge, but also deliberately searched for by firms and other actors because no one has all it takes to fully achieve sustainability targets (Pinkse & Kolk, 2012). The search for heterogeneity in partner selection poses a challenge to mainstream approaches for collaborative know-how accumulation. In fact, the literature on strategic alliance still tends to take it for granted that partners will share certain similar types of information and expectations about each other's behaviour during the life cycle of the alliance (Kale & Singh, 2009), for the effective development and deployment of AMC. On the contrary, successful collaboration for sustainability requires partners to feel comfortable, and to actively advocate for diversity and dissimilarity. This implies an ability to map diversity with the aim of identifying which actors are interdependent and concurrently needed to achieve social and environmental targets. Additionally, collaborating for sustainability requires a high like-mindedness between participants to anticipate the threats relating to diverging intentions, heterogeneous needs, goals, modus operandi and different implementation patterns (Baranova, 2022). Awareness of partners' differences is an important pre-condition to develop collaborative practices that give value to interconnectedness, overcome siloed approaches and incorporate a level of complexity typical of socio-ecological systems (Dentoni et al., 2021).

Heterogeneity of the partners involved also implies different views on priorities, traditions of hostility, distrust or ignorance between businesses, governments and civil society organizations, as well as sectoral differences in communication or knowledge-exchange approaches (Selsky & Parker, 2005). Beyond mere awareness of diversity, participating in sustainability-oriented collaboration requires an extended capability to manage conflicts, tensions and trade-offs. These are common in any form of interorganizational collaboration and relate to how participants intend to contribute and gain from joint efforts. Nevertheless, divergence when dealing with sustainability tends to be particularly acute because participants' heterogeneity affects what they give value to, and the extent to which such goals are adversarial (Oskam et al., 2021). In other words, differences and related tensions may not be resolved, but they need to be accepted in working towards the creation of a sense of unity in diversity (Ahmadsimab & Chowdhury, 2021) and by developing an attitude to navigate paradoxes (Sharma & Bansal, 2017). This is what facilitates the transfer of knowledge and promotion of learning among partners, despite the multi-faceted nature of partnering organizations. Different ways of working, perspectives on the issues at stake and interests need to be meaningfully managed and integrated to support the development and exchange of knowledge.

Heterogeneity is also evident in power differentials across members in a sustainability-oriented collaboration, especially if it involves NGOs (Baranova, 2022). Studies show how certain initiatives fail to deliver results because of market forces that exert downward pressure on the achievement of social and environmental goals,

which could threaten their operations (Moog et al., 2015). As a result, partnerships tend to mirror, rather than improve, existing connections of power between North and South, governmental and private authority, global professionals and local grassroots, which can be considered a problem resulting from the power imbalance across participants (Bäckstrand, 2008). Therefore, members of a sustainability-oriented collaboration are expected to work on the development of collaborative decision-making that is deliberately decoupled from power considerations and experience at coalition building and compromising to promote systemic views (Planko et al., 2017). In light of the difficulties relating to heterogeneity, recent studies point to the need for a bridging agency as a collaboration capability that can be developed internally, or relies on intermediaries who function as translators in initiating or supporting integration across sectors (Villani et al., 2017).

Finally, sustainability-oriented collaboration often requires the involvement of actors outside the partnership (e.g., governments or local community) to attain the anticipated goals. In extreme cases, the involvement and enactment of stakeholders is the outcome of the partnership itself (MacDonald et al., 2019). Recent research has investigated how partners' capacity to build the partnership structure relates to the achievement of intended outcomes. These studies point to the relevance of stakeholder mapping, decentralized decision-making and empowerment of the final beneficiaries of the collaboration (e.g., deprived community or the natural environment), as key engagement capabilities to be deployed when collaborating for sustainability (Vestergaard et al., 2020).

Limited predictability and porousness of the collaboration

Partly related to the evolving nature of sustainability challenges, which cannot be framed and understood in linear cause–effect relationships, related collaboration structures are often launched with very limited preclusion regarding expected membership or logics to follow in order to exert pressure for conformity (Ansari et al., 2013), or to foster participation. As a consequence, the transfer of knowledge and promotion of learning among collaboration partners is not only riskier and more complex due to the multifaceted nature of the partnering organizations, but also because the knowledge and resources acquired in a given context tend to be situated, idiosyncratic or simply obsolete as the partnership evolves, new partners join the collaboration and others leave (Easter et al., 2023). Collaborative capabilities based on experience, which form the basis of successful AMC deployment in strategic alliances, become as important as the ability to unlearn and disrupt stored knowledge and acquired resources to adapt to the limited predictability of the exchange processes and the partnership's evolution.

Beyond the limited predictability of membership and functioning, what makes collaboration complex in sustainability is the fact that partnerships tend to have more than one function at the same time (e.g., mobilization of institutional support while creating new standards); also, the roles each member plays in a partnership can shift according to function. In the context of multi-stakeholder platforms tackling climate change mitigation, the need to cultivate mindfulness of the limitations of old paradigms and trajectories, acknowledgement of the unknown and unpredictable, and openness to dialogue and inclusion makes their functioning adaptive and dynamic (Scherer et al., 2013). As partnerships evolve, they may assemble complex sets of external stakeholders that join the project at a subsequent stage. As a result, the increased cross-boundary participation required, given the complexity of the challenge and expected targets, leads to a complex pattern of interactions with the potential to affect outcomes (Voegtlin & Scherer, 2017).

This implies the need to move away from analysis of the single partner's contributions to sustainability towards full consideration of a broader system view (Mena & Palazzo, 2012). Recent research on multi-stakeholder collaboration suggests the creation of a partnership infrastructure that is distinct and independent from its members as a viable solution to face porousness and unpredictability while displaying collective agency, defined as the ability to pursue outcomes beyond the contribution of each individual organization (Koschmann et al., 2012). Accordingly, the partnership itself acquires a stable, distinctive identity to mitigate the risk of management and governance shifting due to changing membership and evolving contributions (DiVito et al., 2021). Collaboration for sustainability must be considered as an evolutionary and iterative process where problems, tasks, roles and contexts are continuously evolving. This posits the need for new capabilities to be developed by participating firms, with continuous adaptation and platform building, combined with an enhanced attitude to accumulate relational capital and trust to mitigate risks related to nonlinearity and uncertainty that typically surround sustainability challenges (Heuer, 2011).

Sustainability-oriented collaborations are not all the same

To further understand the extent to which AMC assumptions are challenged or integrated in the literature on

TABLE 3 Average number of assumptions challenged based on the typology of sustainability-oriented collaboration

	Average number of assumptions challenged	Percentage of articles in the sample
Firm-to-firm	0.57	13%
Cross-sector	1.82	37%
Multi-stakeholder	2.44	50%
Full sample	1.97	

sustainability-oriented collaboration, we analysed the distribution of challenges to AMC research across forms of sustainability-oriented, interorganizational agreements. Following the extant literature (Clarke & Crane, 2018), we classified sustainability-oriented collaboration according to the characteristics and number of partners involved in the collaborative agreement. We identified three distinct groups. The first group included *firm-to-firm sustainability alliances* (13% of articles in the sample), formal agreements that involved two firms and were typically focused on solving specific sustainability issues and aimed at value appropriation by exploiting complementary knowledge and resources within the boundaries of the alliance (Volschenk et al., 2016). The second group incorporated *cross-sector collaborations* (37% of articles), formal agreements between two actors belonging to different sectors (profit, non-profit and public sector) with the aim of exploiting complementary assets to find a solution to a specific social problem, primarily to produce social change, benefiting stakeholders placed outside the boundaries of the collaboration (Seitanidi & Crane, 2009; Vurro et al., 2010). The third group consisted of *multi-stakeholder initiatives* (50%), a type of collaboration that involves multiple organizations acting in an orchestrated fashion to purposefully promote a system-wide change for the partners involved, but above all, for the whole of society (de Bakker et al., 2019).

As reported in Table 3, we observed that the average number of challenged assumptions was associated with the typologies of sustainability-oriented collaborations: articles focusing on firm-to-firm sustainability alliances challenged, on average, less than one AMC assumption (0.52), while articles on cross-sector collaboration and multi-stakeholder initiatives challenged, respectively, 1.82 and 2.44 assumptions.

These results are not surprising; in fact, moving from interfirm alliances to multi-stakeholder initiatives adds layers of complexity, which exacerbate the differences between mainstream strategic alliances and some forms of sustainability-oriented collaboration. This complexity not only relates to the multiplicity of actors involved, which requires the consideration of a broader range of stakeholder needs and approaches to value creation (Johnson & Schaltegger, 2019), but also to the fact that any stakeholder can play different concurrent roles over the course of the collaboration (Ordonez-Ponce et al., 2021). This is particularly evident in multi-stakeholder settings tackling sustainability challenges characterized by extreme institutional complexity that often leads to incompatible goals, and problems with agenda setting and prioritization for all the parties involved (Cvitanovic et al., 2015).

TOWARDS A RESEARCH AGENDA

By uncovering the assumptions underpinning mainstream AMC research and systematically analysing the extent to which studies on sustainability-oriented collaboration adopt or depart from them, we identified three major areas for further reflection. Based on the comparison between the AMC assumptions and the findings from the systematic literature review, we elaborate an agenda for future research which also considers the potential to combine AMC theory with theoretical perspectives emerging from the study of sustainability collaboration. We summarize the limits of AMC research and the proposal for further research in Table 4.

Overcoming self-interest in performance expectations

The first limitation of AMC research that opens to the development of a future research agenda regards what to conceive as a proper outcome of a sustainability-oriented collaboration. If we assume that capabilities are important to explain variability in collaboration performance, how we define performance is crucial to investigate collaborative capabilities which are conducive to expected results. The literature on strategic alliances has long investigated and evaluated the impact of AMC in terms of improved competitive or financial firm performance (Kohtamaki et al., 2018), assuming the creation of economic value for the partners involved as the main goal of the alliance. Our findings show that this assumption might not hold in contexts of sustainability-oriented collaboration. For

TABLE 4 An agenda for future research

Challenges to AMC assumptions	Potential research directions	Integrative theoretical perspectives
1. Overcoming self-interest in performance expectations		
- Collaborations are meant to achieve social and environmental targets along with economic ones. - Self-interest needs to be balanced with an orientation to the public good. - The achievement of sustainability targets can limit economic return expectations. - The achievement of sustainability goals might require value dissemination rather than appropriation.	- Exploring the taxonomies of success in sustainability-oriented collaborations. - Investigating the tensions, paradoxes and trade-offs of balancing self-interest with selflessness in target setting, task implementation and evaluation. - Investigating the dark side of self-interest while managing a collaboration for sustainability. - Elaborating on the capabilities to disseminate learnings, knowledge and other collaboration outcomes beyond the boundaries of the collaboration.	- Behavioural theory to explain variability in target setting, attention allocation and evaluation. - Paradox theory to investigate how actors manage the tensions of combining apparently incompatible goals. - Ethical theory to investigate the competences and decision-making processes to be deployed for the common good.
2. Embracing heterogeneity in collaboration for sustainability		
- When a system perspective is needed to face sustainability challenges, homogeneity hinders the achievement of considerable advancement. - The deliberate search for heterogeneous partners requires competences to map interdependences to select appropriate partners. - Heterogeneity of the partners involved requires extended capabilities to manage conflicts related to adversarial positions. - Collaboration for sustainability might require or affect actors which are not active in the collaboration and whose contribution must be elicited (e.g., local communities, deprived stakeholders).	- Investigating variation in routines for partner search based on the specificities of sustainability challenges. - Exploring coordination capabilities when heterogeneous partners are involved. - Analysing how firms develop competences to map interconnections among actors involved or to be involved in collaboration. - Analysing competences to manage power differentials among partners, build coalitions, empower regardless of the distribution of resources. - Investigating the role and impact of intermediaries on collaborative decision-making involving heterogeneous actors.	- Stakeholder theory of the firm to clarify how firms identify, understand and integrate heterogenous demands. - Institutional theory to explain which structures are more likely to foster the development of certain collaboration capabilities as well as suggest competences and organizational arrangements to manage conflicting logics. - Resource-dependence view to analyse the impact of power dynamics among actors in a collaboration.

(Continues)

TABLE 4 (Continued)

Challenges to AMC assumptions	Potential research directions	Integrative theoretical perspectives
3. Accounting for the unpredictable in collaboration composition and evolution		
- The evolving nature of sustainability challenges limits the ability of firms to deploy prior collaborations' know-how. - Knowledge and resources acquired in a given context tend to be situated, idiosyncratic or simply obsolete as the partnership evolves, thus limiting inferences from experience. - The functions and expected outcomes of the partnerships change dynamically with an impact on the role played by each participant. - Collaborating for sustainability requires the adoption of system views to display collective agency.	- Investigating the benefits or limits of alliance management infrastructures and routines across sustainability-oriented collaborations characterized by various levels of dynamism and uncertainty. - Studying the processes through which firms unlearn or disrupt previously acquired know-how to face changes over the course of a collaboration. - Analysing the process by which firms learn, codify and apply collaboration-related tasks when the boundaries and functions of the collaboration, as well as participants' role, change over time. - Investigating how firms contribute to creating an identity for the collaboration which is independent from the participants' firm.	- Contingency theory to explain which procedures and structural configurations are needed given certain context or partnership dynamics. - Narrative and communication theories to better explain how partners create common, shared identities despite variation of partnerships' composition and functioning over time. - Complex adaptive system views and network theories to investigate how firms contribute to the creation of platforms or adapt their collaboration capabilities depending on the evolution of the reciprocal interaction within their collaboration network.

instance, as a result of the collaboration, participating firms might need to implement internal changes that could generate negative financial returns in the short term (Moog et al., 2015). An example is where environmental multi-stakeholder initiatives lead to the creation of standards, which make firms' production processes less resource-intensive or pose limits to production capacity. This calls for reconsideration of the mechanisms and routines through which firms achieve superior collaboration outcomes.

When multiplicity of goals and target ambiguity exist, the behavioural theory of a firm (Cyert & March, 1963) has the potential to provide important insights on variability in perceived success from sustainability-oriented collaboration. As engagement is determined by managerial observation and interpretation about given or potential effects, biases in perceptions about the expected benefits from a collaboration could affect the trajectory of further collaborative know-how accumulation, favouring investment into initiatives where financial returns are more predictable rather than those needed to attain higher-order sustainability targets (Jia & Li, 2020). Partly related to this, the behavioural theory of a firm can support theory and practice in navigating the tensions concerning self-interested behaviour and selflessness orientation when the two dimensions of performance are conflicting and require attention allocation (Gavetti et al., 2012).

Recent research has also referred to the paradox theory as a fruitful theoretical perspective through which to explore the way actors navigate the tensions between multiple goals or diverging targets, such as balancing the inclusiveness of actors in a multi-stakeholder setting and efficiency in decision-making (Henry et al., 2022). The paradox lens has the potential to support theory and practice in understanding how to manage collaboration when business and social motives collide, both within the ally and between the ally and the partners. Future research could investigate how firms accumulate more defensive or active responses to competing internal and external demands, by relying on deliberate confrontation and acceptance of conflict, as well as through specialized training and mentoring on coping with paradoxes (Jarzabkowski et al., 2019).

Mainstream AMC research has emphasized the importance of preserving knowledge created, both at firm and alliance level, to generate or maintain competitiveness (Kale et al., 2000). While this argument holds for participation in certain types of sustainability firm-to-firm collaborations, firms participating in other types of collaboration, such as multi-stakeholder initiatives, will also benefit from the diffusion and adoption of the knowledge generated by non-participating firms. In such cases, in order to be considered successful, sustainability-oriented collaborations may entail diffusion of the knowledge created within the collaboration, outside its boundaries or through the involvement of a larger number of actors within the collaborations over time. These dynamics contribute to the emergence of new research opportunities. For instance, scholars may focus on those mechanisms and routines through which knowledge is protected vis-à-vis those that contribute to its diffusion in multi-stakeholder domains.

Related to the previous point, it is worth noting that firms might decide to participate in sustainability-oriented collaborations for motivations that transcend the utilitarian view of corporate sustainability (de Bakker et al., 2019). This may be the case of social enterprises, b-corporations or firms characterized by a strong social purpose, which decide to join a sustainability-orientated collaboration for reasons that differ from, or complement, that of economic value creation. As a result, these firms might be less concerned about knowledge leakages, but more focused on ethical concerns that could seem unreasonable if analysed from a purely competitive standpoint. As a consequence, ethical theories could be combined with the organizational learning and dynamic capability perspectives (Marques, 2017) to suggest which competences need to be developed or deployed to promote positive social change, or deal with ethical dilemmas related to controversial sustainability decisions.

Embracing heterogeneity in collaboration for sustainability

A second important area for future research relates to the need for heterogeneous partners when dealing with sustainability challenges. When collaboration is expected to tackle complex social challenges, the involvement of actors from heterogeneous fields and sectors is crucial to challenge common wisdom, expose participants to alternative perspectives and propose cross-boundary solutions (Dentoni & Bitzer, 2015). Different from mainstream AMC research, the deliberate search for heterogeneity challenges the process of collaborative know-how accumulation, which is expected to be nurtured by similarity among partners to make collaboration increasingly smooth. Indeed, emerging literature on sustainability-oriented collaboration points to the complexity of partners' integration and the definition of a proper collaboration structure as major barriers in multi-stakeholder partnerships or cross-sector collaborations (Easter et al., 2023).

An extension of our understanding on how a firm can develop its AMC when multiple heterogeneous actors are involved in adaptive and dynamic interactions to achieve outcomes that span beyond the collaboration's boundaries

can derive from bridging in the stakeholder theory of the firm (Freeman, 1984). The adoption of a stakeholder-oriented approach implies that firms adopt policies and management processes to identify, understand and integrate the interests of their stakeholders (Bettinazzi & Feldman, 2021; Vurro et al., 2022). The adoption of a stakeholder-based lens in the study of how firms develop collaborative capabilities could open new research opportunities relating to the interaction between practices of stakeholder orientation and the ability to extract learning from heterogeneous sources (Jones et al., 2018). The stakeholder-based view of the firm offers additional theoretical grounds to account for the consequences on performance of increased heterogeneity and numbers of partners involved in sustainability-oriented collaborations. As a larger number of heterogeneous actors, such as NGOs, universities, social enterprises and institutions, participate in such collaborations, the partner homogeneity assumption typical of AMC literature needs to be relaxed. The presence of actors having heterogeneous ideologies, motives, culture and value systems suggests that the efficacy of the proposed mechanisms might vary depending on partner type. Recent advancements in the stakeholder-based view of the firm have theorized about how a firm can manage the multiplicity of relationships, with stakeholders characterized by differences in terms of goals, values and personality traits (Bridoux & Stoelhorst, 2022). By extending such perspectives to study the mechanisms through which firms can effectively reach their sustainability-oriented collaboration goals, it is possible to provide alternative explanations for the strategies they may adopt to interact and stimulate cooperation in contexts characterized by the presence of heterogeneous partners. For instance, in collaborations involving many heterogeneous actors, it might be difficult to create personal relationships with all the actors involved. As a result, a firm might decide to prioritize certain actors by dedicating greater efforts to socially bond with them, or, alternatively, by allocating balanced efforts towards all the actors involved (Hawn & Ioannou, 2016). In investigating such options, future research might clarify the extent to which these alternative strategies drive successful collaboration.

The emergence of AMC is also related to the structural features of the collaboration, as well as the relative roles played by the participating actors. This is increasingly evident in sustainability-oriented collaborations, where involved stakeholders might play multiple concurrent roles, the composition of which may be extremely fluid and dynamic over time, across tasks and challenges (Vurro & Dacin, 2014). In this regard, the presence of multiple, heterogeneous sources of learning could promote further understanding of the condition under which collaboration supports firms in overcoming the burden of experiential learning or codification (e.g., inertial behaviour or overconfidence; Levinthal & March, 1993).

Institutional theory could open new research opportunities in the field, as institutional contexts can both provide a backdrop of resources and practices that affect the design and functioning of the collaboration, and evolve as a result of partners' interaction and reciprocal learning (Dacin et al., 2007). Thus, the emergence of AMC can be affected by the extent to which a context is institutionalized, with collective agreement upon rules, norms and behaviours. Similarly, learning from experience, or opportunities for codification, can also occur at lower levels of institutional development, where fragmentation prevails. Beyond the level of institutionalization, the number of, overlap in and conflicts among the multiplicity of institutional arrangements can guide behaviour and interactions in a given institutional context (Dorado, 2005). Thus, institutional perspectives will inform mechanisms to manage conflicting logics, with particular emphasis on how organizations cope with complex, conflicting or adversarial expectations about each other's role in the collaboration.

It is not only the institutional structure of the context that affects the way firms interact and learn from interaction, but also the distribution of power in relation to the roles played by each actor in the collaboration. In this regard, the resource-dependence view (RDV) can better explain or extend current understanding of the dynamics by which participating actors develop their collaborative capabilities on the basis of resource allocation (Diestre & Rajagopalan, 2012; Rondinelli & London, 2003). Failure to account for these dynamics can lead firms to obtain suboptimal results due to mismatches between competences and resources (Schilke & Cook, 2015). Organizations in the most vulnerable position in terms of resources (e.g., NGOs or community organizations) are closest to the solutions for social needs. Yet, their openness as a source of learning can be constrained by limited resources, limiting the possibility of participating firms gaining access to information and interpretations. Power dynamics across the actors involved might also affect performance. The presence of actors who are dependent on others to obtain financial resources means that some collaborations might be characterized by power asymmetry among the participants (Al-Tabbaa et al., 2019). In such cases, dominant partners might take the lead in collaboration, imposing their own agenda rather than higher-order targets that benefit society at large (de Bakker et al., 2019). Alternatively, there are situations in which the most powerful actors are at risk of being damaged as a result of the collaboration (e.g., stricter environmental standards imposing requirements that raise the costs of production for a powerful multinational corporation). Accordingly, they might push less powerful partners to simply develop less harmful

solutions, which might be sub-optimal in terms of sustainability outcomes. These considerations suggest that unexpected contingencies could explain how capabilities are deployed to achieve results at multiple levels. Similarly, capabilities could be deployed differently based on the role played by the collaborating firms. In this sense, existing theories can be complemented by the RDV widely used by scholars to analyse how firms can effectively manage power imbalances in business relationships (Casciaro & Piskorski, 2005).

Accounting for the unpredictable in collaboration composition and evolution

The last suggestion for future research relates to the porousness of the collaboration boundaries and the unpredictability in collaboration trajectories which typically characterize sustainability collaboration targeting complex social or environmental challenges. Driven by the evolutionary economics perspective, the extant theory has explained the emergence of AMC by referring either to the accumulation and sharing of alliance management knowledge embedded in prior and ongoing alliances (Heimeriks & Duysters, 2007), or to the adoption of more proactive approaches to articulating knowledge and experience into usable, codified objects and routines to drive alliance-related behaviour (Zollo & Winter, 2002). Alliance-related tasks are implicitly assumed to be repeatable and comparable to the point of being universally applicable. The downside of experience accumulation and codification of alliance practices is becoming evident in contexts of increasing levels of environmental uncertainty and complexity (Niesten & Jolink, 2015). Yet, current research does not take full account of the dynamics and antecedents of alliance capability development in complex, dynamic environments, where new alliance types emerge that differ not only in terms of expected outcomes and composition, but also in terms of functioning, which may affect the ability of firms to learn, codify and apply alliance-related tasks.

In addressing the limitations of reliance on tacit and codified alliance management knowledge, the strategic alliance literature has long advocated the importance of creating organizational structures and training programmes devoted to purposefully managing complex learning processes, supporting the accumulation and deployment of alliance management know-how and identifying, screening and attracting prospective alliance partners (Russo & Vurro, 2019). At the time of writing, there has been no research on the role of such structures and deliberate processes (e.g., dedicated alliance functions) in the context of sustainability-oriented collaboration.

In this regard, scholars could apply the pillars of contingency theory (Lawrence & Lorsch, 1967) to investigate the appropriateness of structures and practices of collaboration management depending on the nature of sustainability challenges to be addressed and according to the specific configuration of the collaboration (Imbrogiano, 2021). Such approaches could also support theory and practice in surfacing the dimensions, at the context, partnership and actor level, according to which collaboration capabilities and supporting structures need to vary to accomplish the evolving tasks related to sustainability. The contingency view has recently been applied to the context of multi-stakeholder collaboration, pointing to the crucial role of partnership design on the ability of the partnership to reach its intended aims (MacDonald et al., 2019). These findings could be extended at the participant level to understand how, and with what results, collaboration know-how is developed and retrieved to contribute to specific patterns of collective action.

Based on the characteristics and functioning of complex sustainability-oriented collaborations, such structures are expected to evolve and embrace additional functions. As participation in sustainability-oriented collaboration may entail unlearning old assumptions that exclude social and environmental consideration from business decision-making, and learning new ones that include stakeholder-related issues, alliance management structures could be extended to support such unlearning processes or the reshuffling of stored knowledge, along with changes in the boundaries and functioning of the interaction.

The DCV will continue to provide explanations on how firms can adapt and reconfigure their own resources as well as those of the alliance (Helfat et al., 2009), even in collaborations that are characterized by higher openness and inclusion compared to traditional strategic alliances. It is important to recognize, however, that sustainability-oriented collaborations can also be characterized by more porous and less firm-centric governance forms to cope with sustainability challenges (Dietz et al., 2003). The existence of alternative governance forms might question some of the implicit assumptions of the DCV and call for further investigation on the prevailing mechanisms proposed by AMC scholars. In particular, these new governance forms entail different decision-making processes, authority, trust mechanisms and managerial roles as compared to the traditional firm-centric governance typical of strategic alliances (Bridoux & Stoelhorst, 2022). If we accept that the structural dimension and composition of the partnership matter in predicting the performance consequences of specific alliance-related capabilities, we should also account for system and network dynamics to investigate the full process and determinants of collaboration know-how acquisition, storage and deployment. The network view has recently been advocated both in the study of multi-stakeholder initiatives (Reypens et al., 2016) and in the implementation of system innovations

for environmental sustainability (Leite, 2022), to explain the co-evolution of actors' decision-making based on the structure and density of reciprocal interactions. Future research should elaborate on this point to identify additional sources of a firm's fragility or opportunities for capability development, given the possible relational and structural configuration of the collaboration. In this regard, the impact of collaborative decision-making could be investigated on the emergence and subsequent deployment of collaborative know-how at the partner and partnership levels, with specific reference to the presence of certain coordination mechanisms or governance mechanisms (DiVito et al., 2021). Alternatively, research could investigate whether formal and informal networks either facilitate or hinder partner interaction or ongoing learning when complexity and fluidity prevail, both in the partnership's composition and in tasks attribution over time (de Abreu & de Andrade, 2022).

The literature suggests that the function of a sustainability-oriented collaboration can vary over time depending on the level of maturity of a given sustainability issue. When knowledge about the challenge and potential solutions is limited, sustainability-oriented collaboration is mostly oriented towards the promotion of open dialogue and confrontations. Once the boundaries and requirements become clearer, sustainability-oriented collaborations tend to have a more deliberative purpose among participants, embracing monitoring and enforcing (Garcia-Castro & Aguilera, 2015). This, in turn, suggests that the likelihood of certain outcomes may also depend on how the aim of the collaboration is collectively framed, either towards information sharing or the creation of soft laws and/or formal rules. Emerging research has pointed out the need to integrate a narrative and communication perspective in the study of sustainability-oriented collaboration, especially when collective action is required to reach societal goals (Koch et al., 2021). Narrative theories have been advocated, especially in the case of contested, ambiguous terrains when dealing with evolving sustainability issues (Gazley & Guo, 2020). This could provide further hints on how to support coordination and the creation of collective identities by managing communication flows from heterogenous parties, whose role also evolves over time.

CONCLUSIONS

In this study we started from the identification of conventional assumptions prevailing in research on the development and deployment of capabilities for alliance management and discussed whether, and to what extent, the specificities of sustainability-oriented collaboration challenge their applicability. The problematization of the extant research on AMC unearthed that scholars still rely on the implicit assumption that capabilities matter to the point they contribute to economic value creation. Further, such capabilities are assumed to be developed and utilized in controllable environments, after participating actors have reached a self-interested agreement on the targets to be achieved. The more firms engage in collaborations that diverge from this model, the more the need to question those assumptions and provide guidance for further field development.

To the best of our knowledge, this study is one of the first attempts to reveal the field assumptions in the AMC arena, by relating their emergence and deployment to the specificities of sustainability-oriented collaboration. Being among the pillars of collaboration success, the construct has mostly remained universally applicable as long as the focus is maintained on interfirm collaboration with clear competitive intents. We started with identification of the root assumptions and problematized these in light of the specificities of sustainability-oriented collaboration. In so doing, we reflected on the need to revise the conceptualization and operationalization of performance in sustainability-oriented collaborations, where a balance is required between self-interested aspirations and higher-order societal goals. This opens a completely new avenue for research, starting from a taxonomy of performance that can drive scholarly debate to clarify when, why and how firms should deploy management capabilities to generate expected outcomes from sustainability-oriented collaborations. We also showed that sustainability-oriented collaborations may take various forms and structures depending on multiple characteristics, such as the number and heterogeneity of the actors involved. In this regard, the structure and configuration of the interorganizational collaboration will play a crucial role in determining the ability or inability of firms to develop and use AMC, either for their own purposes or for the achievement of shared goals.

We also contributed towards the use of a problematization approach to challenge extending conventional perspectives on strategic alliances, which becomes pressing in response to the rapid emergence of new issues and paradoxes (He et al., 2020). In particular, we demonstrated how problematization can be combined with a systematic literature review approach to bridge two still unrelated streams of literature, namely AMC research and studies on collaboration for sustainability. This combination of review methods helped us elucidate the extent to which AMC assumptions can be translated in the sustainability domain when specific characteristics distinguish sustainability-oriented collaboration from strategic alliances.

Finally, we provided a systematic analysis of sustainability-oriented collaboration by explicitly bringing in the capability perspective. Thus, we stimulated further

research on what drives the achievement of collective goals, pointing to the relevant role of collaboration capabilities along the entire life cycle of the collaboration. We proposed a less simplistic view of how collaboration on sustainability unfolds, suggesting the need to take into consideration the complexity of multiple goal setting, conflict management due to heterogeneity in composition and unpredictable patterns of reciprocal interaction. We shed light on the need for specificities when studying sustainability collaboration, contributing to the scholarly conversation on the limits of conventional management approaches when firms deal with complex social and environmental challenges.

In light of these contributions, we had to take decisions regarding the limitations. Firstly, for the sake of simplification, we only mentioned the dynamic nature of sustainability challenges, without classifying specific trajectories. The literature on grand societal challenges shows that collaboration can provide solutions that start locally and span the whole system, or can be generated by collective actions that participants need to adapt locally. Hence, future research could further theorize on the nature and dynamics of sustainability challenges to expand our understanding of the capabilities that firms need to develop and use, based on, for example, the scale, scope or time horizon of specific social and environmental problems. Similarly, we accounted for the great diversity across forms of sustainability-oriented collaborations and started to investigate under which circumstances challenges to mainstream AMC research become more relevant. Whether specific forms of collaboration require a stronger emphasis on specific drivers of AMC development, or have impacts on given AMC components, was beyond the scope of this paper. Nonetheless, the assessment of whether specific types of sustainability-oriented collaborations impact on AMC development and use is a matter of further debate.

Second, we focused on the firm perspective to investigate the applicability of AMC in the sustainability collaboration domain. As collective actions assume relevance in the study of how actors can contribute to meeting the sustainability agenda, there is an opportunity to extend the construct of AMC to other actors, such as non-profit and civil society organizations, as well as governmental actors. Future studies could elaborate on the alignment and misalignment among actors regarding the content and deployment of such capabilities, and relate this to the achievement of collective goals. In a similar vein, the interaction between capabilities developed at actor and system level could deserve further consideration.

Finally, we did not consider one subtle aspect, that firms can manage multiple collaborations at the same time, both conventional and sustainability-oriented ones. This adds a further layer of complexity, stemming from the need not only to adapt and manage specific governance structures, but also to balance different pressures associated with each collaboration structure. Future research could investigate and theorize on the intended and unintended consequences arising from these multiple collaboration contexts, and whether specific capabilities need to be developed to bridge the different collaboration domains (strategic alliances vs multi-stakeholder collaborations). Similarly, we did not distinguish between partner-specific competences and general collaboration competences, which is a construct that is already present in the AMC literature. Future research could extend our elaboration to understand whether, and to what extent, collaboration know-how developed by repeatedly engaging with a given partner can spill over into general partnering know-how for sustainability.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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