

Sustainability change management in inter-organizational innovation networks

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ABSTRACT

Managing sustainability-oriented organizational changes has received increasing attention in the international literature from the perspectives of corporations and universities. Nevertheless, researching sustainability change management (SCM) from the perspective of the cooperation of corporations and universities, especially the underlying factors of the cooperation, remained overlooked until now. Based on the change management (CM) literature, this research focuses on an international inter-organizational network with universities and corporations, and empirically studies their autonomous SCM characteristics and the collaborative planning dynamics of a sustainability-led innovation (SLI) project. Results show that SLIs cannot only come from SCM strategies, but emerging opportunities within inter-organizational networks could also induce them. Important contextual factors of CM, i.e., regarding strategy, structure, and capabilities, however, could and should be interpreted during SCM and SLI project planning, as these underlying factors force cooperation partners to compromise with each other in project scope. The results suggest that compromises could not undertake autonomous strategy alignment or capability building, only minor changes in the project scope which will still allow leveraging existing capabilities or require a few additional structural coordination mechanisms. The findings contribute to the literature by highlighting empirical examples of inter-organizational SLI challenges, deriving from autonomous balancing needs during SCM.

KEYWORDS

sustainability, organizational change, change management, innovation, inter-organizational networks

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1. INTRODUCTION

Managing organizational changes aimed at a more sustainable socio-economic future has gained significant scientific attention in the previous decade (Lozano et al. 2016). These organizational changes could be practically important for ensuring company competitiveness (Stocker – Várkonyi 2022) or the social responsibility of universities (Danaf – Berke 2021), but other challenges, such as COVID-19, which impact(ed) higher education (Szabó et al. 2022) and business operations (Meyer et al. 2022), might distract the attention of change leaders who could directly shape organizational change directions and processes towards sustainability (Doppelt – McDonough 2017). Nevertheless, mitigating climate change and reducing environmental harm must be a crucial socio-economic task (Wanjala et al. 2023), and regarding any sustainability perspectives, for example limits to growth, new opportunities of the green economy, or systems level shift, “it is clear that change – innovation – will be needed” (Seebode et al. 2012: 196). Indeed, sustainability-led innovations (SLIs) have been emphasized in many areas (Seebode et al. 2012), such as renewable energy and decarbonization (Sahoo et al. 2022) or circular economy (Suchek et al. 2021), while the complexity of these processes induced further research following the concept of “open eco-innovation” where access to external resources and inter-organizational collaboration foster innovation performance (Chistov et al. 2021).

While the term “sustainability change management” (SCM) has also been introduced in the context of companies (Barreiro-Gen et al. 2022; Chadee et al. 2012) and also universities (Shriberg – Harris 2012), prior studies, however, tend to analyse SCM only in corporations, e.g., focusing on human, operational, or technological causes and effects (Thakur – Mangla 2019) or universities, e.g., teaching activities (Lozano et al. 2015), but not both. Consequently, despite the significance of the cooperation of universities and corporations in shaping the future, little is known about the dynamics of their collaboration in SCM initiatives, such as SLI projects which could contribute to regional or local development (Szabó 2016). To address this research gap, this study focuses on the SCM-driven SLI project planning of an inter-organizational network formed by corporations and universities. The research aims to answer the following question: *What SCM drivers, challenges, and actions emerge during inter-organizational SLI project planning?*

The study is structured as follows. In Section 2, the background of the research is presented, including the findings of prior SCM research, the theoretical framework, and the methodology. Section 3 presents the results and Section 4 discusses them in the light of the literature and the research framework. Finally, Section 5 summarizes the conclusions, limitations, and future research directions.

2. BACKGROUND

2.1. SCM research on corporations and universities

As mentioned above, SCM research seems to be focusing on corporations or universities, but not their collaboration. Regarding corporate SCM, for example, Thakur and Mangla (2019) explored the dimensions of sustainable operations management with a change management (CM) approach and identified that innovation and technological aspects, resources recovery management, and human resources could be the cause group factors for organizational changes, affecting other



dimensions, such as supply chain and logistics management, production management, environmental, social and economic aspects. [Barreiro-Gen et al. \(2022\)](#) also argue that SCM could be induced by external stakeholder pressure (e.g., from investors, resulting in reactive changes) or internal stakeholder pressure (e.g., from employees, resulting in proactive changes). Nevertheless, as the authors focused on the SCM of government-owned companies, the public-private nature of the operations could be useful for societal contribution by reaching an interactive stage of SCM, when synergies are found and conflicts are minimised between external and internal forces ([Barreiro-Gen et al. 2022](#)). Indeed, according to [Sroufe \(2017\)](#), SCM could be driven by internal forces, such as leadership and the goal of sustainable growth, and also external forces, such as environmental and social opportunities. The author argues, however, that SCM must focus on the integrative view of teams, goals, systems, and financial, natural, and social capital, moreover, redesigning systems, engaging stakeholders, and innovation ([Sroufe 2017](#)). Regarding small and medium size enterprises (SMEs), it is found that organizational learning could facilitate all the stages of certain SCM initiatives (design, internalisation, implementation, and evaluation; [Chadee et al. 2012](#)). Nevertheless, SCM could have serious barriers, as well. Besides the underlying fear of losing power in a new status quo ([Doppelt – McDonough 2017](#)), insufficient technology, top management commitment, competencies, communication, plans, and incentive systems could be internal barriers, while inefficient legal frameworks or a lack of awareness amongst stakeholders could emerge as external barriers ([Orji 2019](#)).

In case of the universities, [Mader et al. \(2013\)](#) suggest that curriculum, research, and engagement activities could be similarly important in an integrative SCM framework. Even though developing leadership skills ([Shriberg – Harris 2012](#)) and SCM knowledge of the students ([Lozano et al. 2015](#)) are considered key factors for a sustainable future, these are less related to the focal organizational and innovation perspectives of this study. The most similar approach considered the link between sustainability reporting (SR) and SCM, discussed by [Ceulemans et al. \(2015\)](#). They highlight that SR is not frequent in higher education, however, it could generate incremental organizational changes in awareness and stakeholder communications ([Ceulemans et al. 2015](#)).

Based on the above, SCM-related collaborations among corporations and universities, and the role of innovation projects in SCM at universities seem to have been overlooked until now. These topics justify the need for empirical research, for which, however, first, a guiding research framework must be developed.

2.2. Research framework

The research framework of the study is based on [Lozano et al. \(2016\)](#), who outlined potential relationships between SR and organizational CM processes in a corporate context. First, by altering their framework according to the research question of this study, SR is replaced with SLI in [Fig. 1](#). The figure illustrates that operative SLI planning and higher-level SCM could affect each other, as (SLI) projects could or should be aligned to the strategic vision (sustainability) of organizational changes ([Al-Haddad – Kotnour 2015](#)), but innovation and technological aspects could also generate organizational changes toward more sustainable operations ([Thakur – Mangla 2019](#)).

Second, the framework is extended with new dimensions based on the inter-organizational nature of the research question. The research focuses on the key dilemmas of SCM and collaborative SLI which could fundamentally derive from autonomous CM challenges in the context of



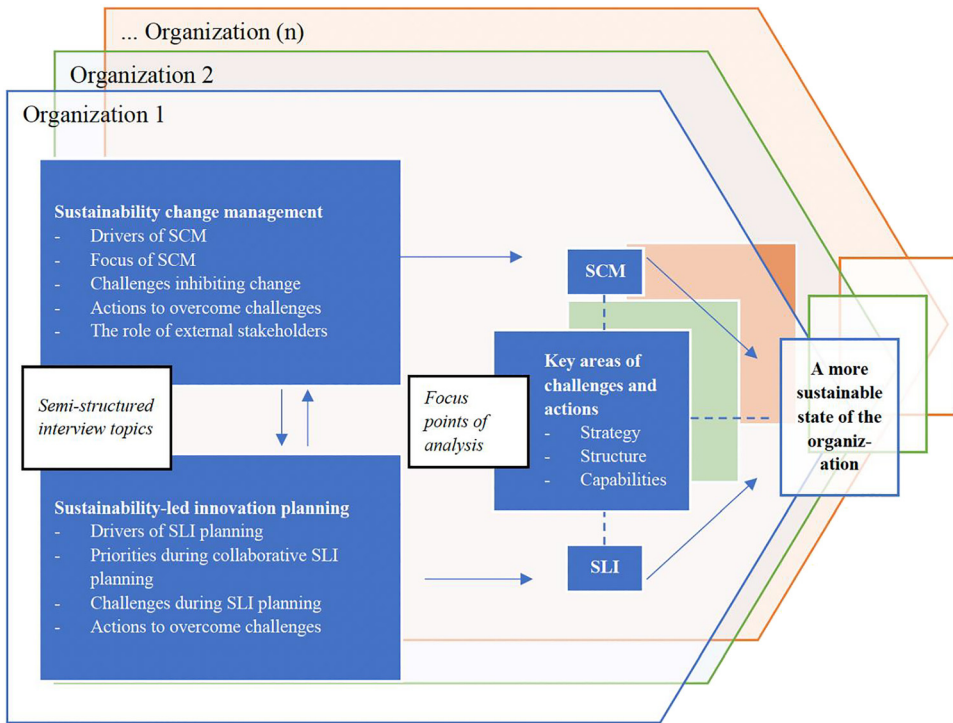


Fig. 1. Research framework

Source: author, based on the framework of [Lozano et al. \(2016\)](#), modified according to the research scope

(energy) innovation-based renewal ([Zavarkó 2022](#)) and come with intra-organizational factors, such as strategy, cooperation, and knowledge management ([Baksa – Báder 2020](#)). From a strategic aspect, [Burgelman \(1991\)](#) pointed out that the more an organization adapts to current external factors, the more its ability to adapt to the future decreases, which can be interpreted as an adaptation paradox. To manage this challenge, organizations must be able to operate efficiently in the present (exploitation), while seeking new opportunities and innovating to ensure long-term success (exploration) ([March 1991](#)). Thus, they need strategic ambidexterity through structural separation or contextual development ([Gibson – Birkinshaw 2004](#)). This comes with further structural challenges because in an ever-changing environment, flexibility is needed for change, exploration, and innovation, but organizations naturally seek stability to ensure efficiency for exploitation ([Dobák 2002](#); [Burns – Stalker 1961](#)). From a capability-based perspective, further questions could emerge about leveraging, reconfiguring and/or developing capabilities for exploitation or exploration ([Teece 2012](#); [Grant 1996](#)). Exploring collaboration challenges and actions to overcome them during inter-organizational (eco-)innovation processes could be contributing as prior literature seem to be more concerned about the opportunities of resource combination ([Kobarg et al. 2020](#)), rather than the challenges that might hamper seizing the opportunity.



2.3. Data collection and analysis

From a sectoral perspective, the organizations of the sample belong to the energy sector or the general academic context. The focal SLI project planning was relevant because of the growing need for new renewable energy technologies, which could support green transformation (Magyari et al. 2022a) through long-term energy storage (Kummer – Imre 2021) and renewable energy integration (Pintér 2020; Magyari et al. 2022b). Prior research highlighted that innovation in these areas might require inter-organizational collaboration (Zavarkó 2019; 2021).

The research followed a qualitative methodology, based on the nature of the research question (Yin 2003) and recent examples in this research area (Rohe – Chlebna 2022). The research was framed by the dynamic-comparative case study method (D-CSSM) which is applicable for researching strategic changes in organizations and developing a midrange theory about phenomena explored in multiple organizations (Fox-Wolfgramm 1997). So, the multi-case study research was focused on an international inter-organizational network which was formed by seven organizations which were interested in SLI project planning: three for-profit companies and four universities, from five countries: Hungary, Croatia, Estonia, Finland, and Italy. The six-month-long research started when the core three partners initiated a brief project concept and started to look for other organizations with complementary resources, and ended after the formal finalization of the detailed project plan, including the work plan, technological details and budget plan. Experts and higher-level decision makers of the collaborating organizations were interviewed, who had the authority for proposing, accepting, or rejecting certain parts of the proposals and budgets. Semi-structured interviews were conducted separately to allow interviewees to explicate internal, autonomous SCM dilemmas which could underly their preferences in the SLI planning process but might not be disclosable within the full network. The process steps of the D-CSSM were the following (Fox-Wolfgramm 1997):

1. obtaining basic information, document analysis about every organization;
2. conducting first-round interviews (two interviewees/organization);
3. open, inductive coding;
4. developing case profiles for every organization;
5. comparing case profiles, developing propositions for second-round interviews;
6. conducting second-round interviews;
7. theoretical coding, according to key perspectives (strategy, structure, capabilities);
8. reaching theoretical saturation with further theoretical iteration (if not, conducting new interviews);
9. verifying conclusions with interviewees and fine-tuning.

As presented in Fig. 1, while the topics for the semi-structured interview questions were mostly based on the sustainability-specific literature (Lozano et al. 2015), the data analysis was focused on the underlying CM dilemmas during collaborative SLI planning. To ensure the validity of the midrange conclusions, theoretical triangulation (change management and innovation management) and data triangulation (documents and interviews) were applied, and multiple organizations were analysed (Gibbert et al. 2008).



3. RESULTS

3.1. SCM background of the organizations

The data gathering, first, was focused on exploring the background and SCM characteristics of the organizations. [Table 1](#) presents the key SCM characteristics. In case of internal drivers of university SCM, interviewees often referred to the organizational mission or key values which induced organizational changes toward sustainability, without concerning explicitly any external pressure to meet global trends. This suggests that sustainability efforts were mostly internalized in the analysed universities. In contrast, in case of the corporations, external drivers were more apparent, for example, Environmental, Social, and Governance (ESG) metrics or new market opportunities which induced strategic changes first, and organizational adaptation second. Regarding the challenges and actions to overcome them, the heterogenous answers cover strategic issues (e.g., new development or innovation plan), structural mechanisms (e.g., creating specific work teams), and capability building (e.g., training and development, extending expertise), in line with the theoretical propositions. Finally, in case of stakeholder management, while certain organizations rather aimed to channel the viewpoints of external actors to the SCM process, others highlighted the need to actively collaborate with them in sustainability-led research or innovation projects. Accordingly, these organizations were mostly the predominant contributors during the focal SLI project planning.

3.2. The relevance of SCM during SLI planning

The SLI project planning was built on an early-phase innovative energy technology of Corporation 2, the strong motivation of University 1 to organize and/or engage in circular economy research which could already have practical significance, and the aspiration of University 2 to support the development of innovative energy technologies. Consequently, these core partners initiated a research and innovation project concept which would allow utilizing the existing resources and knowledge. As it could be seen in [Table 2](#) (especially compared to [Table 1](#)), the drivers of SLI planning were based on key SCM actions in case of certain organizations, while there were no such relations in case of others. This suggests that SLIs do not necessarily come from SCM strategies, but emerging opportunities within inter-organizational networks could also generate them.

[Table 2](#) also presents key SLI planning priorities and challenges of the organizations, which emerged during the planning process and sometimes threatened the expected benefits or preferences of the potential collaborators. Financial aspects were out of the scope of the interviews. The explored priorities and challenges seem to be mainly related to strategic and capability-based issues:

- (the lack of) the strategic fit between priorities, e.g., Corporation 1 would have preferred to develop a more mature technology, or Corporation 2 and University 2 were conflicted regarding the protection and commercialization of the intellectual property (IP);
- (the lack of) fit between existing capabilities, e.g., Corporation 3 and University 3 would have led the same task groups, or University 4 was motivated to contribute but the nature of its contribution was initially unclear.



Table 1. Sustainability change management characteristics of the focal organizations

Name	Main profile	Key drivers of SCM	Focus of SCM	Key challenges of SCM	Actions to overcome challenges	The role of external stakeholders
Corporation 1	Energy infrastructure equipment manufacturing	The need for a new ESG strategy	ESG strategy development and implementation	Missing competencies of ESG strategy implementation	Training and development of many managers who become “ESG leaders” in certain units	Engaging stakeholders in the process through an ESG evaluation survey to explore their priorities Involving external consulting service provider
Corporation 2	Energy technology development	Growing importance of decarbonization	New industrial development activities to support decarbonization	Missing resources to scale up the new technology	Developing an open innovation plan	Involving external organizations in the innovation processes
Corporation 3	Research and consulting services	Market opportunity and social responsibility	Introducing education services	Too narrow industrial focus (energy)	Expanding expertise toward “climate” not only energy	Collaboration with a training centre
University 1	Economics and engineering	University mission	Promoting sustainability inside and outside the organization	Establishing a solid base for sustainability-themed courses	Supporting circular economy research	Forming research partnerships and an innovation ecosystem
University 2	Economics and engineering	Top management engagement	Improving the environmental performance of the university	Missing structural coordination	Creating work teams for specific areas of sustainable development	Involvement of stakeholders, mainly students and suppliers, to develop new ideas

(continued)

Table 1. Continued

Name	Main profile	Key drivers of SCM	Focus of SCM	Key challenges of SCM	Actions to overcome challenges	The role of external stakeholders
University 3	Energy systems, business, and engineering	Following the UN's Sustainable Development Goals	Become carbon negative within 4 years	The configuration of current operations with higher emissions	Developing a climate action plan with focus areas, such as reducing travel emissions or electricity consumption	Organizing campaigns and raising awareness with stakeholders, especially students
University 4	Business and management	Fundamental values	Interconnecting digitalization with sustainability and circularity	Environmental uncertainty and complexity	Introducing a Development Plan for 2025, including strategic goals, education profile, research and innovation	Digitalizing stakeholder relationships to reduce carbon footprint

Source: author.



Table 2. Collaborative sustainability-led innovation project planning by the focal organizations

Name	Key drivers of SLI planning	Priorities during SLI planning	Challenges during collaborative SLI planning	Actions to overcome challenges
Corporation 1	Improving ESG performance	Connection to the hydrogen economy and hydrogen technology development	The project concept was considered to be too focused on early-stage disruptive technology development instead of more mature technologies	Withdrew from this project concept, developing another project idea with only a few organizations of this network
Corporation 2	Prior technology development phases	Upscaling own technology	Being a key contributor to prototype development but IP might be shared with collaborators	Getting permissions to commercialize new technological know-how which is a project outcome
Corporation 3	Seizing emerging business opportunities	Leveraging existing energy knowledge in a well-known area	Aspiration to lead the same task groups as University 3	Separating task groups, getting a leading role in techno-economic analysis
University 1	Gaining scientific excellence in circular economy research	Being the primary coordinator of the joint work and including circular development topics	Balancing the professional interests of different partners while time pressure grows on conducting administrative tasks	Separating professional and administrative meetings with dedicated project managers
University 2	Connecting to state-of-art energy technology development initiatives	Leveraging existing engineering research and development infrastructure in some way	Providing research and development infrastructure for prototype development but key input know-how belong to Corporation 2	Corporate 2 shares IP for getting commercialization rights of know-how
University 3	Contributing to UN's SDGs through practical results	Ensuring the involvement of societal impact analysis and life-cycle assessment (LCA)	Aspiration to lead the same task groups as Corporation 3	Separating task groups, getting a leading role in the socio-environmental analysis

(continued)

Table 2. Continued

Name	Key drivers of SLI planning	Priorities during SLI planning	Challenges during collaborative SLI planning	Actions to overcome challenges
University 4	The new Development Plan emphasizes the role of research and innovation	Leveraging existing business and management knowledge in a new area	High motivation to contribute but low relevance of the initial project concept from the aspect of the existing resources	Defining not only technological but market-related research tasks

Source: author.

While the third theoretical lens, i.e., structural aspects do not seem to be dominant in the planning phase, structural mechanisms which provide stability or flexibility for SLI management were relevant as tools for overcoming challenges. For example, University 1 modified its autonomous structural mechanisms when timeframes were too narrow to prepare formal documentation and a formal decision, the partners restructured project tasks to provide equal authority for University 3 and Corporate 3, or predefined IP rights to avoid conflict between Corporation 2 and University 2.

4. DISCUSSION

4.1. Comparison with prior literature results

The empirical results reinforce some of the findings which were found in the prior SCM literature but extend them with new perspectives. First, there is some unclarity in the literature about the role of innovation during the SCM process. For example, [Thakur and Mangla \(2019\)](#) found innovation and technological aspects to be factors for organizational changes which will lead to more sustainable operations (i.e., innovation could be an input or driver of SCM). [Sroufe \(2017: 321\)](#) also mentions “competitive advantage from innovation” as the part of “sustainable growth” category among the internal drivers of sustainability-oriented changes, but the aspiration to gain competitive advantage seems to be different from the concrete innovation activity. Accordingly, innovation is mentioned among the opportunities of SCM with developing new processes, and products, removing hazardous materials, and research and development (R&D) ([Sroufe 2017: 324](#)). The results of this research show that SLI and R&D were not mentioned among the driver of SCM in case of any organizations of the network, but rather among the actions of SCM to overcome the challenges of SCM or seize new opportunities. This suggests that SCM could be considered a higher-level process in which SLI (planning) projects could be relevant.

Nevertheless, empirical results also show that SLI must not necessarily be part of SCM, i.e., not only could SCM be the primary driver of SLI, but inter-organizational networks could induce SLI. It was reflected in the answers to the questions about stakeholder management, indicating that some organizations were proactively engaging others because of their



autonomous SLI goals, while others contacted stakeholders for other reasons, such as developing new sales channels for a new service (e.g., sustainability-themed education) or organizing campaigns to raise awareness about environmental issues. Beyond the opportunity to collaborate, more operative needs also motivated the organizations to join the SLI project planning, including both external (ESG trend, UN's SDGs, emerging business opportunities) and internal (tapping state-of-the-art technologies, leveraging existing capabilities, long-term development strategies) challenges and opportunities.

As SLI does not seem to be the driver but rather a tool of SCM which could also play a mediating role between market and organizational factors, the drivers of SCM could be also analysed. According to the literature, external and internal stakeholder pressure could induce SCM (Barreiro-Gen et al. 2022). From this perspective, internal pressure, for example, mission or explicated organizational values are more dominant in case of universities, which might derive from the growing importance of the “third mission” and their socially oriented activities (Bayu, et al. 2020). Prior research also suggests that “transdisciplinary research that leads towards applied innovations” might be an effective strategy to overcome the challenges of sustainability transformation in higher education (Mader et al. 2013: 296). This is in line with the inter-organizational nature of the explored SLI project planning and the heterogenous profile of the collaboration partners (e.g., engineering, business and management, energy systems, economics).

In contrast, corporate partners mentioned factors which can be linked more directly to external conditions, which, however, turned into internal motivations, e.g., (improving) ESG metrics, (supporting) decarbonization, and (seizing) a market opportunity for sustainability training. This finding is in line with the SR-focused research of Losano et al. (2016: 179), whose research showed that “companies were affected by both internal motivations and external pressures”. Another similarity between the research results is that Losano et al. (2016) also found that SR facilitated organizational changes which could be assumed in case of SLI as well because SLI was considered an action to overcome SCM challenges by several organizations.

Regarding the challenges of SCM, the research results only partially reinforce the list of Orji (2019). In case of external barriers, higher-level problems were also mentioned by interviewees, for example, environmental uncertainty and complexity, or unsuitable structural configurations. While operative challenges, however, were also mentioned in line with a few suggested barriers (e.g., stakeholder awareness, missing competencies, the need for training), insufficient commitment of top management, preferences of suppliers and buyers, inadequate proactive plans and employee welfare package (Orji 2019) were not explicated as barriers or focus of SCM in the focal organizations.

4.2. Discussion from the aspect of the research framework

From the aspect of the research framework, strategic, structural, and capability-based dilemmas could be interpreted in case of autonomous SCM and inter-organizational SLI project planning, as presented in Table 3. Regarding autonomous SCM, stability was not explicated by the interviewees as a key structural driver or challenge of SCM. It can be explained by the nature of the topic (organizational change) and maybe an underlying assumption that sustainability must be internalised into the everyday operation with a few additional mechanisms to allow additional flexibility (e.g., creating work teams and innovation ecosystems), instead of transforming the whole organization.



Table 3. Interpretation of contextual factors of CM in case of SCM and SLI project planning

Theory		Empirical examples	
Contextual perspective	Potential balancing challenge	Autonomous SCM	Inter-organizational SLI project planning
Strategy	Exploitation	ESG strategy for existing business areas (Corp 1) Climate action plan to reduce emissions of existing activities (Univ 3)	Improving ESG performance, preferring more mature hydrogen technologies (Corp 1)
	Exploration	New development activities, open innovation plan (Corp 2) Introducing new services (Corp 3) Development plan with research and innovation goals (Univ 4)	Seizing emerging business opportunities (Corp 3)
Structure	Stability	-	Ensuring the leading coordinator role (Univ 1) Pre-regulating IP rights (Corp 2)
	Flexibility	Developing an innovation ecosystem (Univ 1) Sustainability work teams (Univ 2)	Modifying work plan to streamline professional and administrative tasks (Univ 1)
Capabilities	Leveraging existing capabilities	Using digitalization expertise to strengthen sustainability (Univ 4)	Upscaling existing technology (Corp 2) Leveraging existing energy knowledge (Corp 3) Leveraging existing engineering research and development infrastructure (Univ 2) Leveraging existing business and management knowledge (Univ 4)
	Reconfiguring existing capabilities and/or investing in capability building	Developing new management capabilities for ESG implementation (Corp 1) Developing “climate” expertise for new service (Corp 3)	Gaining scientific excellence in circular economy research (Univ 1)

Source: author.



In case of strategic goals, there were organizations which induced sustainability-oriented organizational changes to improve the (environmental and social) performance of the existing operational areas, while others emphasized research and innovation to seize new opportunities and diversify their portfolio. Nevertheless, interviewees did not highlight both exploitation- and exploration-related drivers of SCM, but only one of them, which suggests that not every organization steps into collaborative SLI planning with the aspiration to explore or produce something significantly new. This is reflected in the capability-related goals, i.e., an organization could shape the directions of sustainability-oriented organizational changes to leverage the existing capabilities (e.g., digitalization at University 4), while others need new capabilities to realize their SCM goals (e.g., managerial or expert knowledge about ESG or climate protection at Corporation 1 and 3).

Nevertheless, while capability building might appear among autonomous SCM goals, the focal organizations seemed to follow dominantly exploitative goals during the SLI project planning. Accordingly, the priority of leveraging existing capabilities was more often mentioned than investing in capability building. This can be explained by the phenomena that

- the focus of inter-organizational SLI planning was clearly connected to developing something significantly new together (exploration on the network level), which can be realized by combining complementary resources within the network (exploitation of resources);
- and the network-building was maybe focused on finding partners with existing complementary resources rather than partners who could have complementary resources in the future.

These phenomena could be also interpreted based on the governance perspectives of innovation, change, and inter-organizational networks. For example, in case of innovation, [Scherer and Voegtlin \(2020\)](#) highlight that responsible innovation for sustainable development must be incited by investing in R&D and resource allocation in collaboration with external partners. Nevertheless, [Luo et al. \(2017\)](#) argue that organizational changes and responsible actions are not only driven by motivation but opportunity as well, i.e., resource constraints might hamper organizations to realize not only a symbolic but a substantial action for sustainability, e.g., a SLI. The network perspective of these is that strategic goals within a network could include achieving new resources, efficiently using existing resources, gaining market power, or improving status; which could induce network actions, e.g., building or cutting connections, acquisitions, entering or exiting a market ([Hernandez – Menon 2021](#)). Accordingly, the core SLI planning partners were interested in building new connections to access existing resources of other organizations, who were interested to use them efficiently in an innovative area.

Despite these theoretical benefits, SLI project planning was also challenged by capability-based conflicts. It is because leveraging existing capabilities was a priority in case of several organizations, and overlaps and differences in fundamental autonomous capabilities both caused difficulties during SLI project planning. For example, two universities were interested in becoming the leader of certain activities, while another had a strong motivation to contribute but complementarities in the initial project concept were not clear. In addition, differing strategic interests also challenged collaborative planning, e.g., regarding the overall project goal in terms of technological maturity or sharing of the existing and commercialization of future IP rights. Nevertheless, most of these challenges could be handled by shaping the project scope, modifications in the project structure (e.g., new task groups) or regulating IP “transactions”, except one that was concerned with the fundamental goal of the project.



Based on these empirical results, first, strategic dilemmas, and second, capability-based dilemmas indeed appeared as challenges during autonomous SCM and collaborative SLI planning, while structural mechanisms were rather the tools of problem-solving instead of the sources of problems. This finding suggests some hierarchy between these contextual factors in case of the inter-organizational collaboration, i.e., the focal organizations were willing to slightly modify the initial project scope or introduce additional structural coordination mechanisms to enable SLI, but they would be conflicted about new internal capability building for network (project) goals (instead of leveraging existing capabilities) and especially sensitive for any factors that would require considerable changes in their autonomous strategies.

5. CONCLUSIONS

Given the research gap of the SCM-driven SLI dynamics of university-corporation collaborations, this study aimed to answer what SCM drivers, challenges, and actions emerge during SLI project planning. Empirical data from the multi-case study research suggested that strategic, structural, and capability-based topics appear among autonomous SCM drivers, challenges, and actions, as well. However, SLIs do not necessarily come from SCM strategies, but emerging opportunities within inter-organizational networks could also induce them. Yet, partners rather prefer leveraging existing capabilities for a SLI than investing in capability building in favour of network goals. Similarly, fundamental strategic conflicts about the project goal could not be overcome but project activities could be restructured, or structural coordination mechanisms could be introduced to enable SLI planning and realization. These results demonstrate exploitative organizational attitudes toward inter-organizational SLI planning, the SLI might represent exploration for the overall network or the sector, though. Moreover, the findings also suggest that autonomous strategies and existing capabilities as primary drivers of SCM and SLI planning, while structural solutions could be considered only as actions to overcome challenges from strategic or capability-based misfits. Nevertheless, these findings represent only a midrange theory because of the qualitative methodology used, as conclusions are only validated in the given context. Future research might turn these conclusions into hypotheses for quantitative research and analyse their applicability in other inter-organizational and project contexts.

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