



TENSIONS IN SMES' NETWORKS
FOR SUSTAINABLE ENTREPRENEURSHIP

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Abstract

Purpose. The study analyses how organisational actors overcome internal network problems and implement solutions in SMEs' network contracts focused on sustainability objectives to leverage networking value.

Design/methodology/approach. The study uses a qualitative approach to investigate possible tensions emerging in a business network with sustainability goals. Seven case studies of network contracts were analysed using the interpretative model by Tunisini and Marchiori (2020), which consists of five variables: Individual, Structural, Legitimacy, Interactions, and Governance.

Findings. The research has effectively recognised different challenges and shared methods entrepreneurs often face to overcome these critical issues. The knowledge acquired from this study can be pivotal in creating proactive or responsive approaches to tackle business network difficulties.

Legitimacy issues within variables carry significant weight, especially in sustainable networks, as they are difficult to address directly. Although external factors may be helpful during start-up, they can become uncontrollable obstacles for entrepreneurs in developing the network.

Practical and Social Implications. The paper presents research-based recommendations for SMEs to overcome tensions and achieve external legitimacy through supplier support and customer recognition of added value. It also proposes effective management practices and regulatory guidance for policymakers.

Originality of the study. While the benefits of business networking and interaction have been primarily emphasised, research on the problems and tensions in interaction and networking still needs improvement. This paper has tried to develop a deeper analysis of the concrete problems that can emerge in business networks, with particular attention paid to those SMEs networks that aim to reach sustainability goals.

1. Introduction

Small and medium-sized enterprises (SMEs) are considered the engines of worldwide economies and the primary source of job creation (Wiklund et al., 2019). In 2021, the SME sector accounted for approximately 99.8% of all European enterprises and employed 66.6% of all workers (European Commission. Directorate General for Internal Market, Industry, Entrepreneurship and SMEs., 2022).

Due to their impact on economic growth and progress (Steiner & Atterton, 2014), factors influencing SMEs' survival propensity have been researched for many years (Sharma et al., 2020). What is known is that crucial business survival factors include, for example, business experience (DeChiara, 2012), the territory that provides access to new competencies, and the possibility of establishing strategic networks (Liu & Yang, 2019).

Beyond the context just described, SMEs must also consider that sustainability is regarded as a new strategic and long-term goal for firms, countries, and society (Finke et al., 2016), leading to the transformation toward more sustainable production and consumption processes (Roy & Singh, 2017).

This is reflected in research where increasing contributions have been devoted to implementing sustainability measures for larger enterprises (Casalino et al., 2014). However, SMEs cannot ignore their stakeholders' demand in this area (Handoko et al., 2014), though they face barriers in implementing sustainability systems (Álvarez Jaramillo et al., 2019). To this end, studies have recently highlighted sustainability challenges for SMEs (Johnson & Schaltegger, 2016).

As it is often not feasible for a single organisation or sector to have the knowledge or resources to "go it alone" (Govindan et al., 2019), identifying successful forms of sustainable collaboration is instrumental in achieving a higher degree of knowledge sharing and for building an overall competitive advantage throughout the product life cycle (Cao & Zhang, 2011; Touboullic & Walker, 2015).

This is even more important for SMEs, where business-to-business interaction relationships and networking become essential to pursue sustainability goals (Pastore et al., 2020). A lack of resources, competencies or information can be overcome thanks to the skills and experiences of other actors (Snehota, 2003), for example, competitors or suppliers (Meqdadi et al., 2012). Developing and being part of business networks can be an instrument to share knowledge, costs, and risks thanks to synergies among the business network's actors (Tunisini, 2017a). European funds frequently support establishing these partnerships, providing resources to enhance SMEs initiatives, particularly sustainability initiatives, and sustaining them during the initial phase (Kulaga & Cardinali, 2022).

The literature has well-emphasised the value stemming from collaboration through interaction; however, less attention has been devoted to the constraints related to business-to-business relationships and business interaction in network contexts. Even if we have recently observed an increasing amount of literature on the “dark side” of business interaction (Abosag et al., 2016; Grandinetti, 2017; Tunisini & Marchiori, 2020), a few studies have been conducted to gain a deeper understanding of the specific problems and tensions related to business interaction. Further, few studies have analysed the drawbacks of business networks and interactions aimed at achieving sustainability goals (Ryan et al., 2012; Tura et al., 2019; Giglio et al., 2020).

(Abosag et al., 2016; Grandinetti, 2017; Tunisini & Marchiori, 2020)

For these reasons, our research investigates the formalised format of Italian business networks, called “Network Contracts” (NCs), in order to answer the following research questions: (RQ1) which are the tensions that emerge in a business network that works on sustainability objectives and how they are characterised; (RQ2) which are the solutions adopted by the organisational actors to overcome problems that arose inside the business network and to exploit the value of networking.

Our research contributes to the literature on the dark sides of business networks, specifically those with sustainability goals. The research aims to ascertain the applicability of the theoretical framework regarding tensions within networks to strategic alliances operating in sustainability issues and to determine whether the encountered challenges are distinct. We provide research-based recommendations and advice to aid small and medium-sized enterprises in developing their business networks while proposing effective management practices and regulatory guidance to policymakers.

2. Literature review

2.1. Network and sustainability

As it is known, a vast body of literature has been produced on strategic networks and the importance of inter-organizational cooperation for firm competitiveness (Mesquita & Lazzarini, 2008; Rosenfeld, 1996; Trąpczyński et al., 2018). Indeed, strategic networks are typically considered an effective way to overcome the constraints often associated with innovation (Hilmersson & Hilmersson, 2021) or sustainability (Halila, 2007; Pesonen, 2001) thanks to the possibility of sharing resources and implementing joint activities.

Sustainable development is often defined as “the ability [...] to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 15). To make this definition more operational in the private sector, it has been customary to use the Triple Bottom Line (TBL) approach (Elkington, 2004), which stipulates that firms should not only focus on the economic value but simultaneously consider the social and environmental value they either add or destroy.

During the last few years, the literature has deepened the bidirectional relationship between sustainability and networks: in fact, the first cannot only be achieved through strategic alliance (Melander, 2017) but, in turn, it affects interaction dynamics within past or new relationships (Melander & Arvidsson, 2021), asking for development of different business model along all the production and supply chain (Aarikka-Stenroos et al., 2022) and involving business and non-business actors including new ones such as start-ups and entrepreneurs (Sabatini et al., 2021). Within the business actors, a significant role is played by the SMEs: they have become increasingly acknowledged as crucial actors in the development of the world economy in terms of employment and income creation, industrialisation, innovation (OECD, 2017) and sustainable growth (Ashrafi et al., 2018; Simionescu, 2015).

Based on the literature, SMEs tend to react to sustainability issues, such as adopting and defining environmental practices. They can benefit from a lean organisational structure (Bos-Brouwers, 2010), which can sometimes limit their actions (Aragón-Correa et al., 2008). However, SMEs have the potential to be more proactive rather than reactive (Klewitz & Hansen, 2014) but often lack a deep understanding of the issue, the necessary resources and capabilities, scale, and the attractiveness to receive financing.

In general, the interaction with external actors can have a fundamental role for SMEs (Klewitz, 2015): joining a business network becomes the most viable solution for SMEs to upgrade their capacity (Tajeddin & Carney, 2019; Woo et al., 2014) and overcome the limits due to their small size (Antoldi et al., 2013; Inkpen & Tsang, 2005; Lavie, 2006). In particular, networks have been described as a helpful instrument to comprehend and address sustainability challenges (Harrison et al., 2023) and to support SMEs in their path (Hilmersson & Hilmersson, 2021).

2.2 Dark sides in business interactions

Close relationships are only sometimes synonymous with good connections. This is evidenced by the fact that many of these close relationships — whether they are joint ventures or loose alliances — fail (Anderson & Jap, 2005). The notion of the “dark side” first emerged in business-to-busi-

ness literature in the mid to late 1990s and has been further developed in the new century (Barnes, 2005; Grandinetti, 2017; Grayson & Ambler, 1999; Håkansson & Snehota, 1995), suggesting 'problems', 'challenges', 'difficulties', and 'drawbacks' related to structural, behavioural and psychological issues that exist in business relationships. Increased attention to the dark side of relationships has helped better understand the nature of business relations, which often require careful management.

Several variables can affect the effectiveness of the network. Some of them are linked to the features of the actors, while others are to the net and its governance: lack of commitment or trust or willingness to share information (Govindan et al., 2021), power relationship or opportunistic behaviours (Chowdhury et al., 2016), weak ties (Semrau & Werner, 2014), the network size (Burt, 2019) and inefficient coordination process (Mitrega et al., 2012) are just some examples. Another critical role is played by proximity, not only geographical but also organisational, cognitive, social, institutional (Xavier Molina-Morales et al., 2015), and relational (Nicholson et al., 2017): the lack of these elements can have adverse effects on the partnership, reducing, for example, the effectiveness or making more complicated the communication or the learning process between the members.

Often, the crisis fosters all these variables, increasing the vulnerability of the alliance, mainly when trust, a similar mindset, and a common goal are weak, and they are beaten by personal interest and opportunistic behaviour. Other times, networks become the resilience instrument (Herbane, 2019) as solutions for small, medium, and big firms are different (Polyviou et al., 2019) because SMEs are more liable to unstable demand and financial problems linked to weaker cash flow, payment delays, and fewer equity reserves (Kossyva et al., 2014).

Tunisini and Marchiori (2020) conducted a thorough review of network failure literature. They were able to organise and categorise the factors that can produce tensions and problems in business networks in order to reach their collective goals. They classified these factors as individual, structural, legitimacy, interaction, and governance issues. Specifically, according to the authors, problems in network interactions can be reconducted to:

- Individual variables refer to the actors' tendency to prioritise individual goals, the fear of losing personal control, making decisions based solely on personal gain, struggle to anticipate the outcomes of collaborative efforts, and difficulty in predicting financial outcomes (Håkansson & Snehota, 1998).
- Structural characteristics of the network concern the variations and the distance in the features of partners, including technological, cultural, dimensional, managerial and organisational characteristics (Johnsen & Lacoste, 2016).
- Legitimacy variables, following institutional theorists, are defined as

“the generalised perception that the actions of a network are desirable, proper, or within some system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574) and that “refers to the status and credibility of the network and network activities as perceived both by members firms and outside constituents like funders and customers” (Human & Provan, 2000, p. 328). Referring to external legitimacy, the authors observe that problems in networks arise when external actors such as funders, suppliers or public institutions are not providing the necessary support as they do not recognise the legitimacy of the network (Provan et al., 2014).

- Interaction variables, one of the main challenges faced in establishing a network collaboration is the reluctance of the partners to share their knowledge (Oliveira & Lumineau, 2019). This is compounded by disagreements among the companies involved and some network partners' lack of active participation. Additionally, there may be difficulties in dissolving existing ties and changing these ties within the network. Another hurdle is the absence of any previous business exchange before the formation of the network collaboration, making it challenging to manage the partners' relationships effectively.
- Governance variables, such as network governance, “entails the structure and processes that enable organisations to direct, coordinate and allocate resources for the network and to account for its activities” (Vangen et al., 2015, p. 1244). A recent study (Reeves & Pidun, 2022) reported that “wrong governance choices” accounted for 34% of network failures. According to the prevailing literature, the main difficulties in network governance refer to the lack of coordinating skills and task-specific competencies necessary to reach network goals (Provan & Kenis, 2007), the lack of shared mechanisms to inhibit opportunism and sustain trust development among members (Hagen & Choe, 1998), the absence of a network manager or a network orchestrator (Moretti & Zirpoli, 2016).

The past literature has identified several resilience features necessary to overcome or to face the crisis, for example, the rapidness of response, agility, flexibility, redundancy (Ali et al., 2021), risk or HR management (such as employee training for crisis management) (Ortiz-de-Mandojana & Bansal, 2016) and collaboration. Some characteristics can be time-consuming and require expensive costs; others can be rapidly realised without high investment. In a network, some of the partners can ensure financial solidity or can help to design collaborative and long-term strategies (Shashi et al., 2020): the different knowledge and perspectives provide advice and support in the decision-making, mainly during a situation of adversity (James, 2000; Shaw, 2006).

However, crises can sometimes push the company to consider and de-

velop new business or strengthen the actual one (Kossyva et al., 2014): cooperation is crucial when uncertainty and risks are higher.

2.2 *The Network Contracts*

Networks can take on various forms. Formal networks typically have a defined structure that outlines goals, actors, and the commitments required from partners. Informal networks, on the other hand, lack this level of specification.

In Italy, the network concept has been officially recognised since 2009 through the Decree-Law N°78. This law aims to formalise existing partnerships or promote the creation of new ones by identifying the members, goals, duration of the contract, and members' duties and rights (Arrigo & Tassani, 2016). The regulations recognise two types of legal status: one is a "light" form of contractual networks ("reti contratto" according to the Italian regulation), and the other is a "heavy" form of contractual networks (named "reti soggetto") (Pastore et al., 2020; Tassani, 2011).

Heavy contractual networks have legal subjectivity separate from their members and are legally required to form a joint governance body and patrimonial fund. On the other hand, light contractual networks have fewer obligations. The government recognises them as a means of strategic alliance for enhancing individual and collective innovative capacity and competitiveness in the market while safeguarding partners' autonomy.

NCs offer opportunities for designing new projects and sharing information, resources, costs, and risks, which can reduce uncertainty and increase firms' effectiveness. This tool is highly adaptable, as it allows for goals to be set not only related to typical purchasing, production, and sales activities (Aureli et al., 2011) but also for more complex objectives such as expanding internationally (Baldo & Aureli, 2012), innovating (Belliggiano, 2019), or developing sustainable projects (Rossignoli & Lionzo, 2018). This means that NCs can be of great strategic value to Italian SMEs, helping them overcome size limitations, ensuring survival and growth, improving their performance, and even enabling entry into international markets.

Assigning a network manager and defining performance indicators in the contract is recommended to ensure that initiatives are efficient. The governance can be given to a group or a single person who will facilitate information sharing, coordinate activities and actors, reduce conflicts within the network, reinforce the vision, and find solutions to problems arising during the relationship. It is vital to find a balance between all parties involved and avoid opportunistic behaviours (Aureli et al., 2011; Grandinetti, 2017; Tunisini, 2017a) to increase trust and strengthen ties, ultimately promoting cooperation within the alliance.

Over the past decade, there has been a rise in NCs between firms from

various industries. Although extensive research has been conducted on the benefits of such contracts, there is still a lack of structured research on their weaknesses.

3. Methodological approach

We adopted a qualitative research approach to explore potential tensions that may emerge in a business network that works on sustainability objectives, and we employed an embedded multiple-case design (Scholz & Tietje, 2002; Yin, 2014). Because the current research on the dark side of sustainable business networks is at a relatively early stage, a qualitative research approach is suitable to generate a deep and detailed understanding of this complex and far-reaching phenomenon in a real-life setting (Corbin & Strauss, 2008).

We analysed seven case studies of NCs using the interpretative model developed by Tunisini and Marchiori (2020).

In light of the intrinsic limitations in conducting long and demanding in-depth interviews with NCs companies, we encountered difficulties composing a sufficiently large sample to address our research inquiries. As a viable alternative, we leveraged the data obtained from a prior survey conducted by Tunisini and Marchiori in 2020¹, coupled with subsequent desktop analysis², to fashion a representative sample that could adequately mirror the distribution of typical traits among the reference population. We used a stratified technique on the analysis variables described below to ensure representative sampling. We then selected a simple random sample within each stratum. Since some of the collected information was from 2018 and there is no official source to determine which NCs are still active and functioning, we searched their official website for indicators of their status:

- *Analysis of the network website.* NCs who keep their websites updated are considered active.
- *Date of the last event organised by the network.* The lack of communication regarding NC's participation in public events was seen as a sign of poor network functionality.
- *The last news on the website.* The lack of updates on NC's development, partnerships, and market expansion suggests network issues.

¹For a more detailed sample description, consult Tunisini and Marchiori (2020). It is important to mention that the results of the empirical studies (which had other research objectives) were used only to identify business networks that have declared sustainability objectives.

²The sample was then enriched with an update of the investigation to include new NCs identified through a desktop survey of the Chamber of Commerce's database up to 2021.

Table 1 presents the final sample consisting of seven networks³, each associated with a main respondent from a different firm. All the respondents are network managers or individuals with a significant role in their respective networks. To protect the confidentiality, the names have been anonymised.

The authors collected data using online interviews (MS Teams) between April 2021 and April 2023. Each interview lasted between 60 and 90 minutes and was conducted by at least two authors. The number of interviews (7) was determined according to the criterion of theoretical saturation – that is interviews were conducted until the information gathered was considered sufficient and no further relevant information could be garnered through additional interviews (Corbin & Strauss, 2008).

The semi-structured interviews consisted of six parts. The first part gathered general and contextual information, while the following five sections addressed the five categories of factors causing tensions in business networks. The obtained results were used to categorise the business networks based on the following variables:

- *Year of establishment and the life cycle stages* (Tunisini, 2015, 2017b). The classification includes four phases: (1) *preliminary phase*, companies acquire the awareness of the value of operating on the network and the effective role of the network contract; (2) *development phase*, where the network contract is signed, and there is the definition of micro-projects, the determination to achieve shared objectives and to implement the network program; (3) *implementation phase*, characterised by the development of the projects, the realisation of the program, and the definition of new objectives; (4) *evolutionary phase*, this phase can lead to the consolidation of the business network, its redefinition, or its conclusion.
- *Actual number* (and the original number) of firms.
- *Status of the network* (Tunisini & Marchiori, 2020), distinguishing among (1) active networks (with ongoing activities), (2) dormant networks (which have completed the start-up process but have encountered problems in the development phase), and (3) blocked networks (which have identified problems).
- *Type of network*, distinguishing between (1) light or (2) heavy form of contractual networks.
- *Characteristics of the network*, distinguishing among (1) vertical (member firms play different roles in the production chain) or (2) horizon-

³The sample group was initially comprised of 20 business networks selected based on their active status and declaration of sustainability objectives. However, 13 of these were excluded from the interviews due to reasons such as being unreachable or explicitly stating their disinterest or lack of time to participate in the study.

tal (member firms carry out the same activity or different but complementary activities).

- *Presence of focal firm(s).*
- *Presence of a network manager.*
- *Coordination methods, distinguishing among (1) the presence of a leading company; (2) a joint management team with representatives of all companies involved; (3) direct collaboration between administrators of individual companies; (4) the appointment of a network manager.*
- *Contribution of firms to the network's activities, distinguishing among (1) a firm contributes more than all the others; (2) some firms contribute more than others; (3) equidistributed.*
- *Geographic location of the network.*
- *Sector Product / Services.*
- *Type of sustainability objectives.*
- *Integration of sustainability objectives in the general objectives of the network.*

The analysis, based on case studies, helped us assess the relevance and significance of the analytical framework and provided new insights from real-life examples. Of course, this approach produces more robust findings as the number of cases increases (Rowley, 2002), and we are also aware that the choice of case studies can be problematic (Eisenhardt & Graebner, 2007). In this sense, it is crucial to remember that practical and logistical considerations also play a role in case selection (Seawright & Gerring, 2008).

For this reason, the selection of the cases was based on the theoretical framing approach (Yin, 2014). In setting up the multiple case studies, we have selected networks that (1) have publicly stated their commitment to sustainability goals and (2) can prove that they are still actively engaged in their collaborative efforts.

Tab. 1 - Sample of the networks analysed

Business Network	Year of establishment (and life cycle stage)	Actual number of firms (Original number of firms)	Status of the network	Type of network	Characteristics of the network	Presence of focal firm(s)	Presence of network manager	Coordination methods	Contribution of firms to the network's activities	Geographic location of the network	Sector	Product / Services	Type of sustainability objectives	Integration of sustainability objectives in the general objectives of the network	Informant position
A	2011 (Evolution phase)	4 (3)	Active	Light network	Vertical	Yes	No	Presence of a leading company	There are firms that contribute more than others	Lombardy (Global activities)	Mechanical and electrical engineering	Construction of optical systems	Development of observation systems in the green field (pollution analysis systems, agricultural production monitoring systems, etc.)	Partial	Network leader
B	2011 (Implementation phase)	8 + 3 "Ethical" partners + 80 Affiliated professionals (9)	Active	Light network	Horizontal	No	Yes	Common management team with representatives of all companies involved	There are firms that contribute more than others	Veneto (Activities also in neighboring regions)	Construction	Sustainable building constructions	Accelerate energy-efficient renovations for buildings to reduce greenhouse gas emissions	Full integration	Network leader
C	2020 (Development phase)	10 (9)	Active	Light network	Horizontal	Yes	No	Common management team with representatives of all companies involved	Equidistributed	Piedmont (Activities in the same region)	Construction	Sustainable building constructions	Accelerate energy-efficient renovations for buildings to reduce greenhouse gas emissions	Full integration	Network leader
D	2017 (Evolution phase)	11 (10)	Dormant	Heavy network	Horizontal	No	Yes	Common management team with representatives of all companies involved	There are firms that contribute more than others	Veneto (Activities in the same region)	Tourism	Services for cycle tourists	Use of the territory through sustainable means of transport	Partial	Network leader
E	2012 (Evolution phase)	3 (4)	Active	Light network	Vertical	Yes	No	Presence of a leading company	There are firms that contribute more than others	Lombardy (Global activities)	Research centre	Industrial and academic research on robotic systems and parallel kinematic stimulation	Development of projects in the field of robotics, machine controllers equipped with AI and modeling and simulation of mechanical systems for the production of renewable energy	Partial	Network manager
F	2012 (Evolution phase)	5 (6)	Active	Light network	Horizontal	Yes	No	Presence of a leading company	Equidistributed	Lombardy (Activities in Italy)	Furnitures industry	Design and supply of wood furniture	Use of eco-sustainable materials and renewable energy. Development of sustainable packaging	Partial	Network leader
G	2020 (Development phase)	14 (5)	Active	Light network	Horizontal	Yes	Yes	Common management team with representatives of all companies involved	Equidistributed	Lombardy (Activities in the same region)	Construction	Sustainable building constructions	Lean construction	Full integration	Network manager

We have followed up with respondents via email to gather any missing details. Our study's external validity has been improved by utilising a standard and replicable interview protocol and conducting a cross-case analysis, as per Yin's (2014) recommendation.

4. Results

This paragraph presents the key findings obtained from the analysis of the in-depth interviews. It is divided into three parts as follows:

- In the first part, we precisely describe the analysed sample.
- In the second part, we report analysing the main tensions that negatively affect business networks. We focused on highlighting the critical factors that impact effective and efficient networking for sustainability. To conduct this analysis, we categorise these variables by referring to the classifications developed by Tunisini and Marchiori (2020).
- In the final part, we highlight measures and actions taken by the network actors to tackle these concerns.

4.1 *Descriptive analysis*

Table 1 shows that the selected NCs were signed within the last decade and represent various stages in the life cycle of a business contract. All NCs are currently active (this is an inclusion criterion in our study) except for network B, which is experiencing temporary development issues. However, they are actively reformulating their objectives and working methods and, therefore, meet the inclusion criteria in our study.

Based on the analysis conducted, it is evident that companies have a clear preference for adopting light networks. Only one heavy contract (network D) is chosen from all the networks. This data is significant since network D has suspended its activities to look for a new configuration and operating mode. It is noticeable that horizontal networks are more prevalent than vertical networks. In horizontal networks, member firms perform the same activity or different but complementary activities, while in vertical networks, member firms play different roles in the production chain.

Another characteristic feature of the NCs analysed, also predictable, is the presence of a focal firm, which often drove the birth of the business network and subsequently continued to guide and support it. Coupled with this is the limited use of an officially designated network manager (apart from heavy network B, which is obliged to adopt it), which only appears in 2 of the 6 light networks.

On the contrary, it is noteworthy how shared network coordination is increasingly establishing itself in almost all horizontal networks. This phenomenon indicates a growing tendency towards project and network governance collaboration. The emergence of such forms of coordination highlights the importance of sharing knowledge, resources, and expertise amongst network participants. This trend can be attributed to a desire to achieve common goals and objectives and enhance network operations' overall effectiveness. As such, it is imperative that organisations recognise the significance of shared network coordination and actively incorporate it into their network governance strategies.

The diversity of sectors in which the various National Committees (NCs) operate highlights that only in the construction sector it is plausible to envisage a complete integration of sustainability objectives within the framework of the network's goals. Although this objective has yet to be fully realised, it is nevertheless feasible. Notably, the NCs operate in different sectors, which indicates the challenges of integrating sustainability objectives in the overall framework of the network's objectives. However, the construction sector is an exception to this observation, as it presents a unique opportunity to integrate sustainability objectives comprehensively and effectively.

In conclusion, the NCs' diverse sectors of operation underscore the need for a tailored approach to integrating sustainability objectives. The construction sector stands out as a promising platform for achieving this objective despite the challenges that lie ahead.

4.2 Tensions emerged within the network

Individual variables

Individual variables refer to challenges that arise from prioritising individual goals, struggling to predict collaborative outcomes, and other factors.

During the interviews, losing control over customer management and production processes was identified as a significant concern. Autonomy is highly valued, and its absence is a major issue.

When we decided to create a single network interface for all customers, some had difficulty giving up direct control over their customers and production processes. However, we believed it was necessary to benefit the network and the services provided. (Network B)

Sometimes, people have shown selfish attitudes that prevent the development of a collaborative work approach in the network. This is usually caused by their focus on personal gains in the short term rather than considering the benefits that the network can provide in the medium and long term.

A problem arose due to an excessive desire to take on too many tasks

without seeking help from colleagues in the network who could offer assistance. This led to specific individuals hoarding work and gaining a personal advantage, which caused issues. (Network C)

Structural characteristics of the network

The structural characteristics of a network can be classified as variations in partner features, including technological, dimensional, and organisational aspects.

The interviews show that the distance between network partners is an important issue. This distance can be referred to managerial, cultural or technological issues. We can refer to how companies manage their production processes, technologies, or the physical distance between them. Different companies may have different approaches to deal with these issues.

The network E, which specialises in robotics and Artificial Intelligence research, encountered a crisis because of differences in research and development approaches and resource allocation among the original firms in the network. As a result, the network underwent a complete reorganisation, leading to a partnership between three industrial companies and a university in their area of expertise.

From the beginning, the development approach of the consortium's companies has been problematic. One company, in particular, has always allocated profits towards research activities, which has created a cultural difference and has become a more significant obstacle over time. (Network E)

The makeup of a network can also be important. When actors are similar, they can benefit from a shared technical language and deep collaboration on specific issues. However, if the actors are too alike, it can hinder innovation and reduce partners' motivation.

Surprisingly, even if the companies in a network are vastly different from each other, they can still experience similar issues or problems. Less structured companies may not have the necessary resources to effectively contribute to the project, leading to inefficiency, timing conflicts, and potential tension between members.

In order to maintain a balance between leadership and followership, patience is crucial. While leaders may push for faster progress, they need to understand and respect the pace of the group as a whole. (Network G)

Legitimacy variables

Legitimacy variables refer to the recognition of the network as an entity with its own rules (Provan & Kenis, 2007) and to the status and credibility of the network and network activities as perceived both by member firms (internal legitimacy) and outside constituents like funders and customers

(Human & Provan, 2000). External legitimacy variables thus encompass external groups such as funders, suppliers, or public institutions that may or may not provide essential support and commitment, as well as resources, that will ultimately determine the overall viability or failure of the network (Human & Provan, 2000; Provan et al., 2014).

Our research confirms the importance of external legitimacy variables in determining tensions or difficulties within the network.

Public institutions play a crucial role in driving the establishment of business networks. They provide incentives and support, particularly in the initial phase of setting up the network, by creating a favourable regulatory environment and economic subsidies / tax incentives.

The public tender for funding played a fundamental role in activating the network. What happened after that? (Network D)

After analysing several case studies, it was found that most of them reported being entirely ignored by the institutions that were supposed to be involved in various ways. Additionally, it was discovered that there are no established network support programs at different stages of the network lifecycle.

In order to keep up with the evolving network, we require a reference point and support that can provide clear solutions. We are currently facing a challenge not related to finances but rather a lack of expertise and feeling isolated. (Network C)

Some interviewees feel that merit and positive networking experiences are not valued enough. This is because economic incentives are distributed to everyone, leading to a flattening towards mediocrity. Additionally, the constantly changing regulatory context and incentives in industrial sectors make it difficult for networks and companies to plan for their future.

The uncertainty of the regulatory and legislative framework creates insecurity, ultimately hindering our network's evolution. (Network C)

Entrepreneurs and network managers often struggle with the bureaucratic approach of public institutions, which can lead to confusing and complicated problems. This is particularly challenging for individuals who have gained experience in foreign countries.

We have not heard back from the Ministry regarding our executive PhD project. However, we have confirmed that there are promising opportunities nearby in Switzerland to support innovative companies like ours. (Network E)

Interaction variables

The term interaction variables refers to partners' reluctance to share knowledge, compounded by disagreements, lack of participation, and difficulty changing existing ties within the network.

During the interviews, the interviewees identified some significant ob-

stacles, such as the poor sharing of sensitive information with network partners and the limited investment of time and effort in joint activities. It was clarified that the goal of the network should not be simply to acquire another customer but rather to construct added value for the customer through the joint activity of all companies involved in the network.

If you do not share new customers or distinctive know-how with your partners within 2-3 years, the partnership may not work. This depends on your willingness and ability to develop the network's business. (Network B)

Another critical factor to consider is the network's composition. This is often not determined by prior knowledge or established trust but rather by the regulatory context in which it is formed. For instance, a public tender might offer economic incentives to create a network.

The network was artificially created. Individuals who were strangers to one another came together at a table with the sole intention of benefiting from public funds. (Network D)

The commitment of certain members is crucial for maintaining the network's activities. Their active attitude motivates other members who may be less involved. If this commitment wavers for any reason, the entire network may be hindered.

The limited involvement of some players in the network caused conflict with "Mr X", who had a more aggressive approach, resulting in tension and misunderstandings that could potentially harm joint activities. (Network E)

Governance variables

The term governance variables refers to the challenges a network faces due to the difficulty in coordinating its activities and the absence of a network manager. The level of cooperation and coordination within a network to achieve its goals depends on the trust that exists between member companies. The density of trust relations and the level of commitment also play a significant role in achieving the network's objectives (Human & Provan, 2000). Small businesses often struggle to trust and cooperate with each other when they have not previously worked together. This can lead to a need for formal governance mechanisms, such as the appointment of a network manager, to facilitate collaboration (Human & Provan, 2000). Several authors have identified the network orchestrator as a critical governance role. The orchestrator inhibits opportunism, diffuses information, moderates processes, and promotes collaboration between member firms (Moretti & Zirpoli, 2016).

Nevertheless, in our research, a significant issue affecting network op-

erations is the network manager's lack of managerial skills or incompetence. Public institutions play a crucial role in establishing networks, but sometimes, they impose institutional subjects to oversee the control and management of the network. This negatively affects the partners who have to deal with poor commitment, limited knowledge of the industry, and inadequate managerial skills.

The promoters of the public tender imposed the network manager and, therefore, had an institutional nature, and what we complain about lies in a combination of disinterest and poor managerial skills. As a result, operations handling has been delegated to an external party who lacks real-world experience in entrepreneurship. (Network D)

The interviews reveal a surprising lack of attention and commitment from companies in identifying the network manager correctly. It seems like there is unawareness of the vital role played by this subject.

On-site work coordination typically occurred through informal discussions among suppliers and the client. The architect appointed as the network manager, responsible for serving as the sole point of contact for the client, was frequently excluded or lacked the necessary credibility with network partners and clients. (Network B)

A network manager is essential, especially for expanding networks or those with many members. This individual provides support by coordinating partners, maintaining the pace of activities, offering a vision, and resolving conflicts between members. Without a manager, a network is more vulnerable to risks.

In a network, it is essential to have a full-time network manager who serves as our link. To be effective, this manager should possess various skills, including psychological and administrative abilities. They must be a project manager but also possess strong communication and listening skills. (Network G)

Sometimes, the responsibility of managing the network is given to an individual within the company who has a significant influence or exhibits strong leadership skills. This decision is not always formal and is based on the importance of the company they represent within the network. It is clear that in the foreseeable future, there will be a tendency towards a centralised decision-making process in network governance, which may limit the participation of other partners in the decision-making process.

The whole network relies heavily on Mr X, who is like a "deus ex machina."

Initially, the other partners were also involved in making strategic decisions, but within 2-3 years, we realised that Mr X was the only one who could consistently deliver excellent results. This became an inevitable process. (Network E)

4.3 Actions taken to address and overcome the tensions

In this paragraph, we highlighted the main actions taken within the network to address the critical issues, tensions and difficulties described in the previous point.

Table 2 provides a comprehensive overview of the findings we obtained from our multi-case study analysis. In this table, we have underlined the typical tensions that emerged in the interviews. We summarised the different approaches used by the network and traced them back to the different categories of tensions that these actions aim to address.

One effective way to facilitate better relationship management within a professional network is by sharing knowledge and experiences with fellow industry professionals, particularly those who operate in the same geographic location. This approach can help foster stronger connections and create a sense of community among colleagues, ultimately leading to more successful outcomes for all parties involved.

We have been acquainted for 30 years, and our companies have been reciprocal suppliers with long-term collaborations. This has fostered a strong sense of trust between us. (Network A)

We have carefully selected and accepted only reputable and established local companies into our network to prevent potential unethical behaviour. These companies have undergone thorough scrutiny and are considered the best in their field. Additionally, a system of ongoing social monitoring is in place to ensure accountability. (Network C)

All the companies within the network are integral to the local industrial community. (Network E)

Some companies are now taking the fiduciary element seriously, with one particular network investing in this issue and implementing specific activities to raise awareness.

We have arranged team-building activities funded by the public in our network. Through sharing challenging situations and finding solutions together, we have found that these activities bring us closer together. By working as a team, we

are able to overcome selfishness and operate cohesively as individual companies within a larger context. (Network B)

This framework emphasises the importance of having companies in the network that are similar in size and production capacity. This facilitates sharing a consistent business idea among the partners, allowing them to benefit from each other's experience and work towards identical goals for future growth. Although not essential, homogeneity is undoubtedly beneficial for the network's success.

We came up with a business idea that met our expectations due to the similarity in size and turnover of the companies in our network. (Network C)

Collaborating towards a shared objective is recognised by all networks as a critical ingredient for success. This collaboration can even extend to developing a uniform product/service catalogue for the market, achieved through adopting standardised technical rules agreed upon by all participating companies.

Sharing new goals was the foundation for reviving a network that had faced years of challenges, leading to significant inactivity. (Network D)

Our products have specific rules in place that reflect our shared goals and approaches, which extend beyond our network activities. Sustainability is a critical issue that we prioritise. (Network B)

Network companies must rely on their unique skills that complement each other to achieve tangible benefits from collaborative efforts. This requires common goals and activities.

The network's strength lies in the complementarity of skills, which prevents overlapping and potential tensions. This has helped us overcome initial reluctance from some partners. (Network A)

In terms of governance, the previous paragraph discussed the negative consequences that can result from the absence or ineffectiveness of a network manager. It is clear that a skilled professional with a strong personality and leadership abilities is essential for successfully managing a business network.

Having clear and transparent roles and responsibilities for everyone involved in the system makes it easier for companies to participate and for the network to function well. Including companies in the strategic decision-making process is essential for the network's success and longev-

ity. Providing established communication methods, rules, and a shared decision-making process is also essential to prevent low involvement or abandonment by companies.

Within our network, the President and network manager hold essential roles. These individuals possess notable competence and recognised personalities. (Network B)

By establishing a new governance structure with well-defined roles and responsibilities acknowledged by all network partners, joint activities have been successfully reactivated. (Network D).

We hold committee meetings every six weeks, and if needed, we schedule them ahead of time. This helps us have clear communication about essential decision-making processes. (Network A)

Table 2. Tension and solutions

Specific tensions emerged	Tensions (categories)	Possible solutions to overcome tensions
Selfish attitudes	Individual variables	(Better) Selection of companies in the phase of forming the network (for instance, decisions can be made based on past relationships, geographic proximity, or complementary skill sets)
Distance between network partners (managerial, cultural or technological)	Structural characteristics of the network	
“Artificial” creation of networks through economic incentives	Interaction variables	
Loss of control over customer management and production processes	Individual variables	Definition of training courses (for instance, this could be related to technical, managerial, or relational issues)
Lack of resources (skills) does not allow active contribution to the project, this leads to inefficiency, timing conflicts, and potential tension between members	Structural characteristics of the network	
Loss of commitment and lack of leadership	Interaction variables Governance variables	
Poor sharing of sensitive information with network partners and limited investment of time and effort in joint activities	Interaction variables	Definition of a clear set of goals and shared quality/process standards. Proposal of a selection of common products/services

<p>Lack of managerial skills or incompetence of the network manager. Lack of attention and commitment from companies in identifying the network manager correctly</p>	<p>Governance variables</p>	<p>Selection of a network manager with strong professionalism and soft skills</p>
<p>A tendency towards a centralised decision-making process in network governance, which may limit the participation of other partners in the decision-making process</p>	<p>Governance variables</p>	<p>Definition of roles and responsibilities within the network Definition of effective communication methods and ways of involving partners in the decision-making process (an example of this is by using common rules and specific communication techniques)</p>

5. Discussion

After examining seven distinct networks with sustainability goals, we successfully addressed our initial research question (1RQ). Our analysis revealed several tensions, which we discussed in the previous paragraph. These tensions helped to validate and enhance our theoretical framework and interpretative model, as per Tunisini and Marchiori's (2020) research. Specifically, we found that the five categories of factors likely to create problems or tensions in business networks were also relevant for explaining the dynamics concerning networks with sustainability goals. This indicates that the challenges encountered by SME's networks are the same, regardless of the goal pursued.

One point we want to stress is that in the case of networks for sustainability goals, the external legitimacy of the network, as defined by Human and Provan (2020) and Provan et al. (2014), appears fundamental. External legitimacy issues can hinder the network's proper functioning, which can also reduce collaboration and increase conflicts among actors, ultimately with the risk of reducing the level of internal legitimacy that impacts the effective governance of the network. While other factors also play a role in determining potential network failures, legitimacy issues hold significant weight, mainly in networks with sustainability goals. It is important to note that public and private institutions play a crucial role in activating these networks, and the lack of support during the development phases can be detrimental to their success. With this evidence, our findings confirm what emerged in prevailing literature about the role of legitimacy as a critical factor "for explaining both early network evolution and ultimate network success" (Human & Provan, 2000).

By conducting semi-structured interviews, we utilised a qualitative methodological approach to investigate the actions taken by individual or collective decision-making processes within networks to address identified critical issues. This approach enabled us to answer the second research question (2RQ) by extracting common solutions from the experiences of entrepreneurs. These actions have proved to be "solutions" for addressing the tensions relating to one or more of the categories analysed, and they can be further qualified in preventive or reactive actions for the onset of tensions in the business network.

Among the preventive actions, selecting the appropriate companies for a network's formation is of utmost importance in coping with any possible issues arising from individual variables. In some instances, networks may be formed due to public and private incentives, resulting in unfamiliar groups of companies with no previous business relationships or common goals, leading to a lack of trust. Additionally, geographical distance can pose a challenge. Hence, careful selection of companies is crucial to avoid such problems. Furthermore, it can alleviate other concerns related to the network structure, such as different company sizes, incompatible management styles, and divergent levels of technology used in production processes.

Furthermore, establishing clear and specific objectives along with mutually accepted standards of quality and process can significantly influence how individuals engage with one another. This, in turn, can pave the way for practical and efficient resolutions, such as proposing various communal products or services that Network E can utilise.

Despite the implementation of measures after the establishment of a network, methods exist to pre-emptively mitigate potential conflicts. These methods include the appointment of a skilled network manager, the precise definition of roles and responsibilities, the utilisation of effective communication channels, and the inclusion of partners in decision-making processes. Such preventative measures can reduce tensions and promote a more cohesive and productive network.

Instead, among the reactive measures, the interviewees emphasised the importance of training. They noted a shortage of training courses available, including management, technical skills, and interpersonal relationships courses. Many attribute this to a lack of support from both public and private institutions. Training is crucial not only for individual and structural aspects of a network but also for its interactions. For example, network B has seen positive results from teambuilding initiatives.

Upon analysing the tensions and solutions, a paradox arises. The category of tensions deemed most relevant is also the one that interviewees and their networks cannot directly address. Despite external factors being beneficial during the start-up period, they become uncontrollable aspects for entrepreneurs.

Through the interviews, we discovered that external legitimacy is sometimes fulfilled by suppliers' support and customers' recognition of added value. This new finding enriches the interpretative model and strengthens the theoretical reference model.

6. Conclusions

Business networks are particularly relevant for SMEs and let these companies overcome their size limits to pursue innovation and internationalisation goals (Hilmersson & Hilmersson, 2021). Sustainable goals are becoming fundamental for SMEs' competitiveness and market positioning, but sustainability is costly and challenging to pursue. That makes increasingly effective networks for sustainability: in fact, they are an essential instrument to overcome the lack of competencies and resources, including, above all, content and process knowledge (Halila, 2007; Pesonen, 2001). While the benefits connected to business networking and business interaction have been largely emphasised, and studies are now deepening the role of the different actors, research on the problems and tensions in interaction and networking still needs to be improved (Harrison et al., 2023). This paper has tried to enter into a deeper analysis of the concrete problems that can emerge in business networks, with particular attention to those SMEs' networks that aim to reach sustainability goals. In other words, the study concentrates on sustainability networks and intends to enhance the existing knowledge on the challenges of business relationships and interdependencies from the SME's point of view to promote sustainable entrepreneurship.

First, it is still challenging to locate business networks that explicitly state sustainability goals as their objectives, particularly those that combine entirely these objectives into the network's general goals.

Furthermore, through an exploratory study based on several cases, we have identified, categorised and systematised the main variables negatively impacting the networks' efficiency and effectiveness. We have also reported on the actions taken by the companies to overcome the emerging problems. When dealing with networks, paying particular attention to external legitimacy variables is important. These factors are critical in explaining a network's emergence and successful development. Additionally, external legitimacy variables play a crucial role in influencing the dynamics of internal legitimation, ultimately affecting the stability of network interactions. These research findings can be helpful for managers and professionals involved in sustainability networking projects for SMEs.

It is crucial to highlight that in contrast to other tensions, the issue of external legitimacy holds immense significance, especially from public enti-

ties, as it plays a critical role in the sustainability of the network. However, the research has not provided any concrete solution or actions to tackle and overcome this challenge despite its importance. This calls for significant attention and further research to address the issue of external legitimacy and ensure the network's long-term sustainability.

Given the current demand for representation in government, we believe that business associations can play an important role (Bennett & Ramsden, 2007). They can do more than just advocate on behalf of their member businesses (Battisti & Perry, 2015). Business associations can work with public institutions to propose well-structured and long-term development plans for their members, which could be of great benefit to businesses that are looking to expand and flourish.

Our study can also be helpful as it develops and applies an interpretative framework on which, however, it is necessary to conduct more extensive and quantitative research. Our research has limitations in the sample's representativeness as many firms are from the construction sector, and we only interviewed one person per network. It could be helpful to extend the study to different fields and interview one respondent for each company involved in the network to compare the different perspectives. Furthermore, exploring the potential links between the sustainability goals of the network and the nature of the tensions that arise within it would be a valuable avenue of inquiry. Finally, we analysed network tensions across all stages of the lifecycle. In this respect, it could be interesting to analyse the main variables acting as enablers and the main variables acting as constraints in the different phases of the network lifecycle.

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