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Systematic Review

Towards Sustainable and Resilient Business Networks—The Role of Relational Resources Facing SDGs

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Abstract

Sustainability, as meeting present needs without compromising future generations, is challenged by resource scarcity and economic uncertainty. An organization's environment affects its functioning and also its resilience. While often studied at the organizational level, achieving the interconnected Sustainable Development Goals (SDGs) requires network-level cooperation. This led to asking the main question: How to develop business network resilience and sustainability in a context of scarcity of resources facing SDGs? To find the answer on that research problem, a bibliometric (5981 abstracts) and widespread systematic literature review (SLR, with 94 full text papers) was conducted. After the review of the state-of-the-art in terms of resilience, sustainability, business network, and SDGs, the ARA model (actors-resources-actions) was employed, to conceptually grasp how relational resources allow the evolution towards sustainable and resilient business networks. The analysis demonstrates that relational resources—such as trust, knowledge sharing, and collaborative partnerships—are pivotal. The study concludes that business networks have to strengthen multi-stakeholder cooperation for sustainable development, focusing on relational resources. These resources enable coordinated actions, foster resource stewardship, and enhance adaptive capacity within the network, directly supporting SDG implementation, particularly SDG 17 (Partnerships for the Goals). That SDG is like organizational umbrella for the remaining 16 SDGs and there is a need to contribute to systemic sustainable development, moving beyond isolated organizational efforts to achieve broader impact.

Keywords: sustainability; resilience; business network; relational resources; SDGs

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1. Introduction

Organizations on the market combine their resources to create new activities, seeking to strengthen their competitiveness based on their business relationships within their business networks [1]. Albeit, no business is self-sufficient, business networks consist of a variety of interdependent entities. Interaction processes between actors lead to incessant change [2]. Adjustment of the short-term activities of every organization to the changes of the business environment in the mid- and long-term is essential to the long-term running of not only a single organization but all business network members [3]. Climate change is leading to resource scarcity [4]. It creates significant challenges globally and within business networks such as immediate shortages of essential resources like fresh water, wood, and food. It can also amplify social problems such as weak state institutions, demographic flows, criminal behavior, and civil conflict, while contributing to ecological deterioration [5].

All industries are thus under stress and must adapt to this profound change. These issues are evident in the sustainable development goals (SDGs), the relational nature of which is being examined by [6,7]. Fonseca et al. [8] highlighted that there is indeed dominance of positive over negative interactions between the SDGs. At the same time, there is enormous scope for research, as Raman et al. [9] noticed that only about 25% of business research is directly mapping to SDGs.

Against the backdrop of business alterations, IMP (Industrial Marketing and Purchasing group) research emphasized how resources are of vital importance [10,11]. It also conceptualized how value is cocreated within business networks through the process of resource interactions, among which business relationships are central [12]. Yet, few articles [13,14] analyze sustainability in the prism of relational resources and study their role in the resilience of business networks [3]. IMP research is a long-standing and well-established research approach, specifically dealing with the business networks level of analysis [15]. This approach is quantified in the ARA model / framework, standing for *Actor-Resource-Activity* and referring to actor bonds, activity links, and resource ties [1]. That framework (model) was employed [16] to conceptually grasp how relational resources allow the evolution towards sustainable and resilient business networks. Also, the ARA model was adopted due to the link between complex market-based business processes (in networks) and the need to take collective action aimed at achieving the SDGs. No entity operates in isolation, and similarly, no Sustainable Development Goal exists in discrete compartments—cooperation between multiple *Actors* is necessary in *Activities* carried out to achieve SDGs using a variety of *Resources*. Most research on sustainability indeed underline the role of technical resources like products and facilities [12] in innovation processes [11]. Moreover, even though some researchers claim for a better understanding of the systemic character of sustainability [11], the role of relational resources with social dimension remains under researched.

This leads us to our overarching research question related to sustainability and business relationships: How to develop business network resilience and sustainability in a context of scarcity of resources facing SDGs? Finding the answer to this question is the purpose of this article. Resource scarcity, referring to the lack of physical or product resources, indeed became a fundamental concept across various disciplines [17]. Resources are needed to running daily business and also gaining strategic SDGs. To respond the question posed, we propose in this paper a conceptual journey around three research sub-questions:

- First, we need to know: How resilience and sustainability are defined at the level of a single organization and at the network level, as well as how the interplay between both concepts was studied? (RQ1).
- Second, as business relationships compose the very first resource of business networks [1], we need to investigate the possibility for collective action to adapt to resource scarcity at a network level through the following research question: What issues should be considered by actors in business networks to enable collaboration and build sustainable and resilient networks based on their business relationships? (RQ2).
- Third, cooperation between actors within the business network is always focused on a common goal, also consciously including SDGs. Identification and orchestrating the common actions aimed at achieving the specific objective requires resources that are diverse and, at the same time, limited. In order to increase the effectiveness and efficiency of these activities, prioritization is necessary; therefore, there is another question: How fostering resilient business networks through relational resources contributes to SDGs? (RQ3).

In this article, the authors intend to understand the relation between the management of business relationships within business networks and the decision-making process

of managers regarding sustainability and resilience challenges, taking into account the SDGs. Decisions made by managers at individual level are indeed influenced, to varying degrees, by their relationships with network actors, which in turn affects the resilience and sustainability of the individual organizations themselves and business networks [3]. Among the articles adopting a network view on sustainability, we notice the prominence of economic benefits expectations over social impact when companies adopt sustainable strategies [18,19]. In their search for performance, companies mostly deal with their environmental responsibilities in economic terms and ignore their social responsibilities [20]. In this paper, we conversely highlight that the key to resilience and sustainability in business networks facing a scarcity of resources lies in the collective action from the social field. In line with Runfola et al. [13], we believe that relational resources made of collective and individual social ties play a key role in building resilient business networks. We also assume that for this to happen, there are some required conditions, among which is a new type of business networks governance defined as resource stewardship.

Section 2 characterizes research methodology. Section 3 contains a bibliometric analysis of literature review on the current state of the resilience and sustainability terms with nexus of business networks. Section 4 demonstrates the focal points of resilience and sustainability. The next four sections present issues based on the results of the SLR. Section 5 presents aspects of resources in business networks for their sustainability and resilience. The content of Section 6 is devoted to the topic of relational resources. Section 7 links analyzed aspects with SDGs. Compilation of all content in order to answer research questions is located in Section 8 (Discussion). The last section (Section 9) in the main text includes final findings with limitations of those papers and our suggestions for future research.

2. Materials and Methods—The Protocol of the Literature Review

The first step in analyzing the research area is to gain knowledge through the identification of the current state-of-the-art. To this end, we employed the bibliometric and systematic literature review (SLR) as a methodological approach, enabling an examination of content in specific area and scope [21]. This review was performed in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Supplementary Materials). Before the start of the search, a review protocol was not registered in the database. We selected Scopus as the most inclusive database to identify relevant studies [22]. Regarding the stated objective and research questions, the analytical process was conducted in seven thematic streams, from the general to the specific (see Table 1). Three streams were focused on obtaining abstracts for subsequent analysis and identification of key research areas. A further four focused on retrieving full-text papers for detailed analysis related to the study objectives. All seven thematic streams were grouped under three approaches. The first two related to bibliometric: (I) general and (II) profile analysis and the last one being the result of SLR—(III) systematic and in-depth.

I. General approach was utilized to identify overall information about:
    1. Trends in business network. The identification of the literature was conducted utilizing two independent phrases ("business relationship" (1A), "business network" (1B) in "titles, keywords, abstracts" to discover resources pertaining to the subject.

II. Profiled approach was utilized to identify focused information concerning:
    2. Aspects of resources in business network. Papers were searched by identification (in titles, keywords, abstracts) two phrases:
        - "business resource" (2A);

- set of simultaneously occurring three words: human and business and network (2B).

3. Issues of sustainability in business network. Papers were searched by identification (in titles, keywords, abstracts) one phrase: "business network" AND sustainability OR ESG OR SDGs (3).

III. In-depth approach (full text papers—the list is in the Appendix A). The papers were examined through the identification phrases only in titles, to meticulously identify scientific resources that are specifically related to the topic, thereby enriching the comprehension of analyzed aspects:

4. Nexus of resilience and sustainability in networks, by identification of papers showing exact coexistence of three words: resilience and sustainability and network (4).
5. Relations between resources in business networks in the prism of sustainability and resilience, by searching four different phrases: "network resilience" (5A), "resilient network" (5B), "network sustainability" (5C), "sustainable network" (5D).
6. Relational resources (exactly the phrase (6) "relational resources") to catch the specific kind of resources which appear through cooperation in business network.
7. Resources which are indicated in the prism of actions toward sustainable development goals; therefore, phrase "resources AND SDGs" (7) was used in the last stream.

Table 1. PRISMA protocol of search strategy for literature review.

Approach	**Bibliometric (Abstracts)**					**Systematic (Full Papers)**						
	General		**Profiled**			**In-Depth**						
Thematic streams	Trends in network		Aspects of resources		Issues of sustainability	Nexus of resilience and sustainability	Relations between resources in business networks in the prism of sustainability and resilience				Resources	
											Relational	SDGs
Phrase in	titles, keywords, abstracts						titles					
Search phrase	1A	1B	2A	2B	3	4	5A	5B	5C	5D	6	7
IDENTIFICATION												
Number of papers	4417	3861	573	12,032	220	42	516	174	32	85	64	61
Total: n = 22,077 (21,103 abstracts and 974 full papers)												
SCREENING												
Articles	2871	2301	335	6900	140	33	307	57	17	39	52	43
Final stage	2839	2277	333	6854	136	30	295	57	17	38	50	43
Journal	2714	2189	314	6444	132	30	291	57	16	37	50	43
English	2581	2047	288	6218	128	30	264	53	16	35	48	36
Total records left after screening analysis: n = 11,774 (11,262 abstracts and 482 full papers)												
ELIGIBILITY												
Area	2147	1701	200	1815	118	18	85	8	8	15	26	32
Subject						11	20	4	4	6	18	31
Total records left after eligibility analysis: n = 6075 (5981 abstracts and 94 full papers)												
INCLUDED												
Included	Abstracts: 5981						Full texts: 94					
Materials included in synthesis—total: 6075												

Source: author's analysis.

The research methodology was formulated, and inclusion standards were employed (in 25 November–26 January), according to procedural framework articulated by the SLR methodology [23]. To be included in the study, the papers had to meet eight criteria:

(1) indexed in Scopus, (2) include specific above-mentioned phrases, (3) document type—limited to articles, (4) publication stage—limited to final, (5) source type—limited to journal, (6) language—limited to English, (7) subject area—limited to two: "Business, Management and Accounting" and "Social Sciences", (8) abstract (for 1–3) or full-text (for 4–7). Publication time limits were not applied, to catch the fluctuation of thematic aspects in an identified set of papers. To identify relevant articles, PRISMA method was used [24]. On eligibility stage, the subject area was limited to two: "Business, Management and Accounting" and "Social Sciences", in order to identify issues related to networks, but specifically, business issues (rather than, for example, IT and mathematical issues, or issues related to living organisms in medicine or veterinary science). Formally, at this stage, duplicates that did not appear in this search process are also eliminated.

Two sets of materials were included in the analysis process. The first group, including mostly abstracts, were analyzed by using VOSviewer (version 1.6.20) to visualize bibliometric networks. We employed full counting method to analyze co-occurrence of author's keywords. Second group included full-text articles. In the following step, we deductively deepened our analysis to identify issues that would enable us to answer the research questions posed. The choice of the papers was performed selectively with the snowball technique [25]. Figure 1 comprehensively illustrates the complete literature selection process, for full-text during SLR process (the list of papers is in the Appendix A).

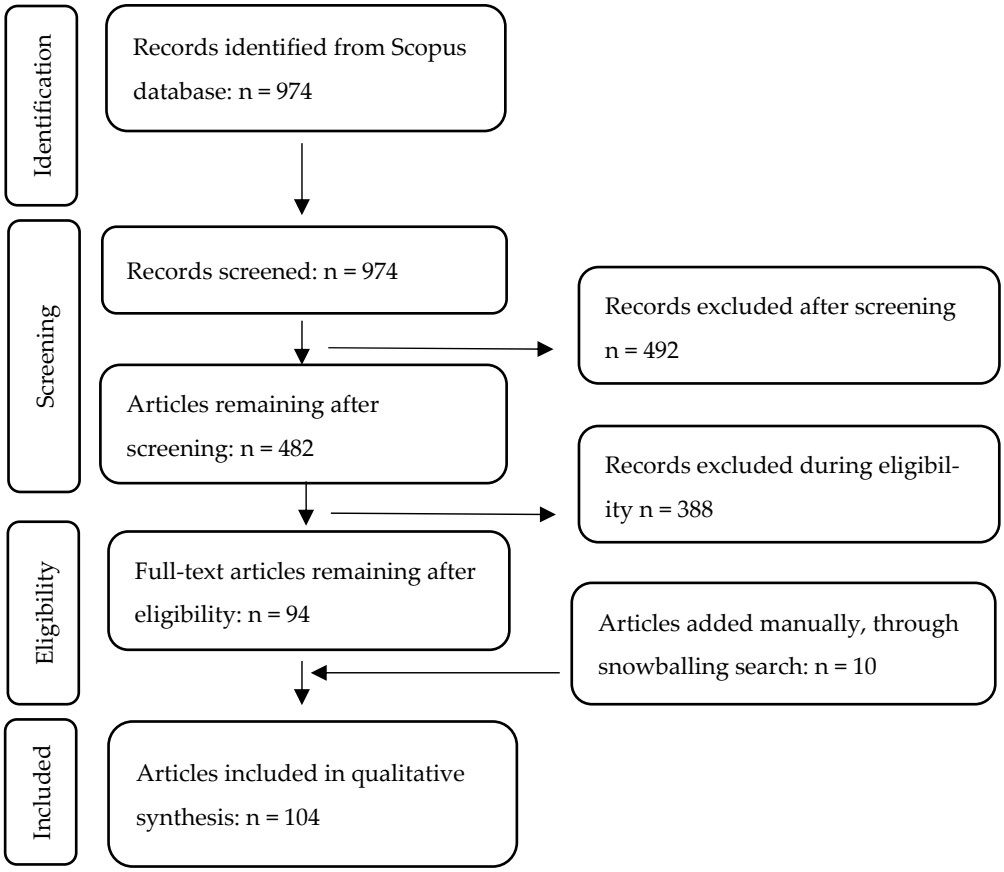
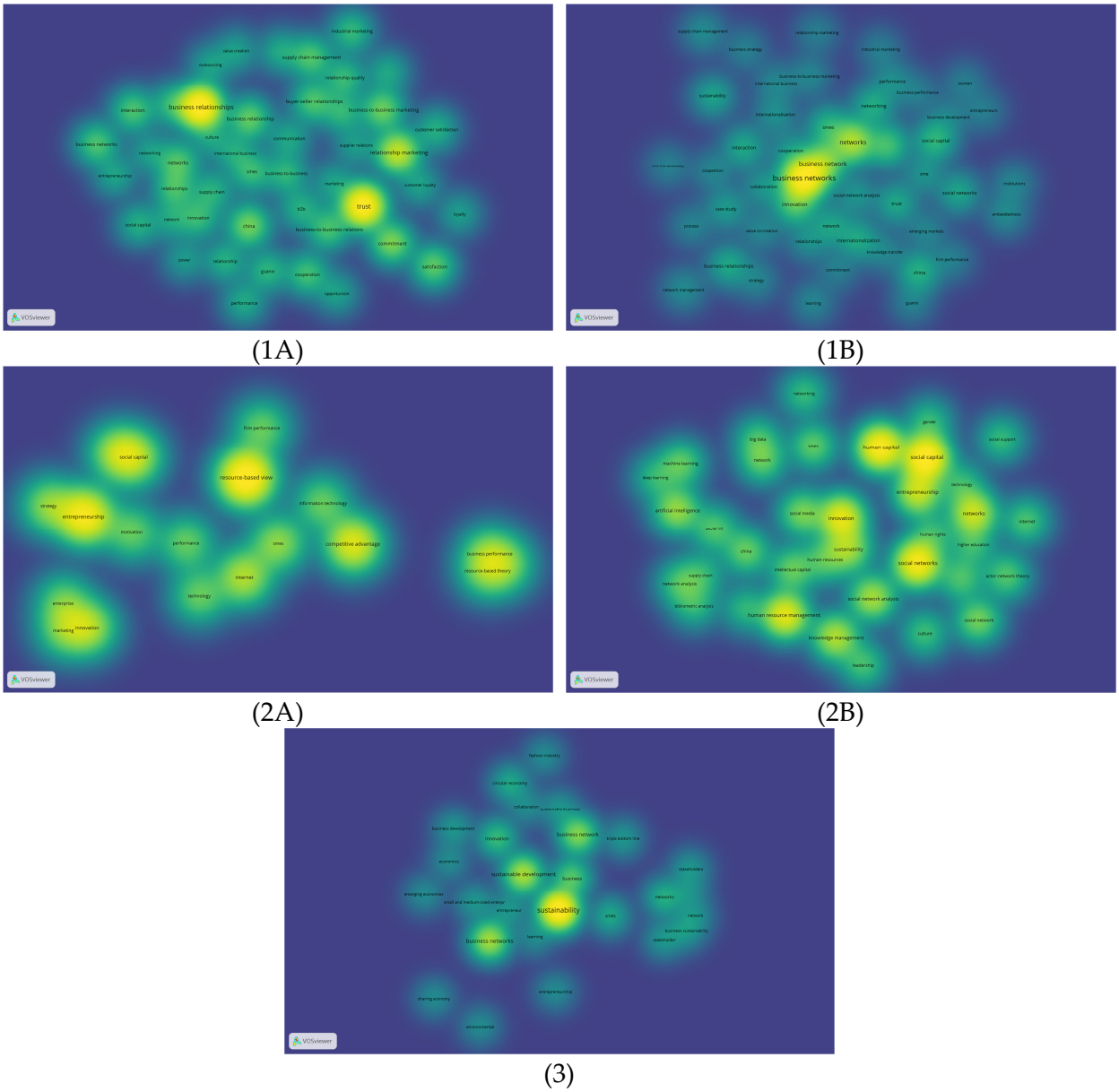


Figure 1. PRISMA flow chart of the SLR process (for full-text papers).

3. Literature Review—Bibliometric Overview

The first Scopus database's penetration (in general approach) identified 2147 articles on "business relationship" issues (search phrase 1A in Table 1). The first article in this set was published in 1948, indicating a long pedigree of issues of collaboration between organizations. Among the total 5514 keywords, thanks to VOSviewer (see Figure 2), we

identified saturation of these keywords with 46 keywords appearing minimum 17 times in the total keyword set. Top three keywords are: business relationship (186 occurrences), trust (180 times), and relationship marketing (99 appearances). It illustrates that trust constitutes the fundamental component of robust and long-lasting business relationships within a business network, facilitating collaboration and mitigating risk, what influences performance. In the set of 46 keywords, none are pointing directly to actors but rather to the outcomes of business relationships: satisfaction occurs 48 times, cooperation 38, buyer-seller relationships 42, and social capital 26. A second penetration of the Scopus database (in general approach) identified 1701 articles on "business network" (see Figure 2) issues (search phrase 1B in Table 1). The first article in this set was published in 1990, significantly later than papers about "business relationship".



(1A) (1B)

(2A) (2B)

(3)

Figure 2. Bibliometric analysis: (**1A**) "business relationship"; (**1B**) "business network"; (**2A**) "business resource"; (**2B**) "human and business and network"; (**3**) "business network AND sustainability OR ESG OR SDGs". Source: own elaboration based on VOSviewer.

In the profiled approach, Scopus database's penetration identified 200 articles on "business resource" (see Figure 2) issues (search phrase 2A in Table 1). The first article in

this set was published in 1971. Among the total 703 keywords, we reached saturation with 24 keywords appearing minimum 3 times. Top three keywords evidence the influence of resource-based view (RBV) framework [26] when it comes to analyzing business resources: resource-based view occurs 11 times, competitive advantage 7, and entrepreneurship 9. In the profiled approach around the phrase (see Figure 2) "human and business and network" (search phrase 2B in Figure 2), we found 1815 articles where the top three keywords are social capital (occurring 71 times), human capital (64), and social networks (59). The last stream in that section concerns phrase: "business network" AND sustainability OR ESG OR SDGs (3). Among the total 679 keywords, we reached saturation with 27 keywords appearing minimum 3 times. Top keywords are sustainability (50 occurrences), sustainable development (22 times), business networks (21 appearances), business network (17), business (12), innovation (9). The list does not include keywords directly related to SDG or ESG.

The overall thematic bibliometric analysis of 5981 papers showed the salience of words pertaining to the relational field like trust, commitment, satisfaction, cooperation, innovation, entrepreneurship, social capital, interaction, resource-based view, knowledge management. Yet, it is noteworthy that there are no direct keywords targeting "actors" or "relational resources" also SDG or ESG. This points to the need for a detailed analysis, particularly in the context of resilience and sustainability of business networks facing SDGs.

4. Focal Points of Resilience and Sustainability

Business networks encompass a multitude of actors and constantly evolve under the interactional dynamics among these [2]. For business networks to be effective, the question of the strategic alignment of each organization with the organizational context becomes vital in case of resource scarcity. Central to the institutional response to such alterations is the concept of organizational resilience, defined as "the measure of the persistence of systems and their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" [27] (p. 14). The term "resilience" stems from ecology and is defined as "the ability of an organization to absorb and adapt to a changing environment" [28] (p. 1). Over the years, the notion of organizational resilience ascended in significance with escalating focus on strengthening organizational resilience [29]. Central in the resilience concept is the idea that each organization operates contingent upon its resources and in conjunction with its surrounding environment. Consequently, it possesses a distinct degree of organizational resilience, and multiple factors contribute to the enhancement of this individual degree. On the one hand, the level of resilience in an organization is natural (without taking any action aimed at strengthening it), on the other hand, the level of resilience is acquired by taking appropriate action [30]. The difficulty in taking action to strengthen organizational resilience is the need to specify the elements that constitute it and their importance in order to initiate profiled strengthening actions [31]. The nature of resilience does not help in this organizational activity because the level of organizational resilience, as specific "business outcome", could be observed and measured when the organization is under stress [32]—rather, in times of war (crisis time) than in peace (normal functioning). This was confirmed by Qi and Mei [33] (p. 13), who indicated that "general measure methods evaluate the resilience by system performance, which does not consider the structural characteristics of the system". They also underlined that such approach to evaluation of resilience "focuses on the deterministic measurement of the network, measures the network after the attack in different aspects" [33] (p. 13). Of course, this is too late and is unacceptable from a management perspective, as it would mean leaving oneself to fate without being able to influence results, while planning and taking targeted action is the basis of management of an organization and its networks.

Consequently, initiatives aimed at enhancing organizational resilience primarily emphasize the allocation of resources, with a particular focus on human resources. This alludes to two further dimensions of perceiving organizational resilience (besides as an outcome)—as a capabilities and as a process, a total of the three categories introduced by Duchek [34].

Sustainability means "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [35]. Nowadays, sustainability in the business context is often equated with the SDGs (sustainable development goals). "With the SDGs, the notion of sustainability and a broad perspective of societal and human development on a global scale are thoroughly intertwined" [36]. In order to achieve sustainability, it is important to consider three issues Environmental, Social, Governance, which constitutes the concept of ESG. It is necessary to synchronize organizational activities in all three areas to achieve the well-being of individuals and societies. An important source for well-being is work, as an aspect of working life that concerns both employees and employers. Organizations and business networks form the basis of economic activities, the creation of products and the provision of services, which translates into the resulting well-being of people, organizations, and societies. The ESG concept provides the basis for analyzing and reporting on sustainability, set by the 17 goals [37], and at the core of the implementation of these activities is targeted management, which also includes activities that strengthen organizational resilience. Both topics of organizational resilience and sustainability issues have been researched [38], analyzed, and introduced into everyday business operations over the years. In contrast, issues of interaction between these concepts are not yet as prevalent [39] and this is an area that is increasingly being explored from both a theoretical and practical perspective. Florez-Jimenez [40] recommend understanding the interplay between organizational resilience and sustainability to help organizations achieve long-term prosperity, including for future generations. A similar conclusion appeared in an article [41], that integrating sustainability practices with activities that enhance organizational resilience supports the achievement of organizational goals in a turbulent environment. Authors of paper [42] emphasize that there is no single method that is universally applicable to every organization when it comes to integrating resilience criteria into a sustainability program, which is also supported by the research conducted by Ciasullo et al. [43].

The most extensive research to date combining the two analyzed concepts has been carried out by Weber [44] and from the conclusions it is worth highlighting two extreme relationships:

1. Organizational resilience as part of sustainability. The first group indicates treating organizational resilience as a prerequisite for organizational sustainability. This approach to describing the relationship between the two concepts indicated is more common than the second.
2. Sustainability as part of organizational resilience. The second group points to the treatment of organizational resilience as an overarching concept vis-à-vis sustainability.

From the standpoint of investigating the underlying causes of the specified dependencies, the origin of decisions pertaining to intra-organizational activities associated with a particular management paradigm is of significant importance. Organizational resilience represents a supplementary concern when viewed through the lens of legal obligations. Conversely, sustainability considerations serve as a foundation for legal mandates, such as the necessity for Environmental, Social, and Governance (ESG) reporting. In the context of action prioritization, evaluated against the standard of legal obligation, sustainability matters possess a distinct advantage (when compared to aspects of organizational resilience) regarding the imperative to address them. Nevertheless, a deficiency in organizational initiatives within areas not governed by legal regulations would be deemed "self-defeating"

for the organization. Yet more than half of global organizations are unaware of the concept of resilience, what was reported in The Deloitte Global Resilience Report [45]. A possible reason for this approach was pointed out by Kassier [46], that the concepts of sustainability and organizational resilience are still perceived as external to organizations rather than embedded in larger socio-ecological systems. Failure to change such perceptions within organizations may lead to a reduction in their resilience to organizational change and sudden crises, which, relative to other market actors, may affect a lower competitive position.

Among the literature, plenty of articles address the sustainability of individual organizations but few study it at the network level [3]. In the analysis of the literature, we are in favor of this view. In identifying relations between resources in business networks in the prism of sustainability and resilience, SLR process was employed (searching streams: 5A–5D). The papers from that set touch different subject and scopes in networks, like: humanitarian aid networks [47], supply network: resilience [48] or sustainability [49], inland waterway network [50], urban ecological network [51,52], metro network resilience [53], R&D network resilience [54]. There are some examples of research coming into the area of supply chain in business network, like sustainable purchasing and supply management [55] and random and targeted disruptions [56] or multiagent systems [57]. Resources and their flow are important in the functioning of business networks. Profiling the analyzed issues to the supply chain appears justified, because "it is very difficult to build organizational resilience without understanding the nature of the threat" [3] (p. 341).

Hence, in systematizing the title issues, we point to two areas:

1. Resilient business network is an interconnected ecosystem of organizations designed to proactively anticipate, absorb, adapt to, and rapidly recover from disruptions while maintaining core functions and creating long-term value. It prioritizes continuity, flexibility, and evolution in the face of risks;
2. Sustainable business network is an interconnected ecosystem of organizations that collaboratively operate under shared principles of environmental stewardship, social equity, and long-term economic viability (in the ESG line). Its core purpose is to create systemic value beyond individual profit, ensuring resilience and positive impact for all stakeholders and the planet.

Nexus of resilience and sustainability in networks constituted the fourth stream in the literature review. The content of the analyzed articles concerns aspects of resilience and sustainability in various networks. Choudhary et al. [58] indicated that the degree of centrality (the number of ties between actors) impacts the resilience and sustainability of supply chain in car manufacturing. Similarly, the number of locations of the company (i.e., a network of hotels under one brand) influences (and, in view of market requirements, essentially forces) network resilience and promotes tourism sustainability [59]. In turn, the more actors in the network and thus interdependencies, the more risks in current and strategic activities [60]. Another type of network concerns transport, which has a critical role in economic development and enhance social well-being, simultaneously requires emission reduction [61], and in that line [62], underlined the need of optimization to enhance the sustainability and resilience of transport networks. Not only transportation systems, but wider infrastructure need to be managed with the aim of building resilient and sustainable infrastructure [63] also in the aspect of circular sharing network [64].

Essentially, every organization operates within a business network—in a supply chain. Of course, interactions between entities at different stages of value creation for the end customer can be managed in different ways. Although, "resilience and sustainability are two critical factors in supply chain networks to assure business continuity and achieve competitive advantages" [65] (p. 1) and they emphasized the strategic role of three collaborative dimensions: (1) network access or reach, (2) trust, and (3) communication. Authors

of [66] analyzed the role of social capital, resilience, and network complexity in attaining supply chain sustainability and concluded that "supply chain social capitals positively influence supply chain sustainability both directly and indirectly via supply chain resilience" (p. 2621). Social capital comes from relationship without which there are no relational resources.

It is worth indicating that other authors of [67] explored how resilience strategies can enhance sustainability and they proposed six strategies, through which organizations can enhance sustainability through resilience mechanisms: (1) governance enhancement for sustainable decision-making, (2) risk diversification for long-term viability, (3) resilience training: bridging resilience and sustainability, (4) innovation culture: nurturing sustainability and resilience, (5) external partnerships: a collaborative approach, (6) resource resilience and knowledge sharing. As a way of linking these concepts and making the approach to taking appropriate business decisions and actions more practical, Astuty et al. [36] proposed a "sustainable resilience strategy", highlighting the four dimensions: (1) survival, (2) continuity, (3) re-orientation, and (4) synergy, which involves developing synergy capabilities with stakeholders in dealing with crises. Synergy is the keyword for cooperation (activities) between organizations, what constitutes one of the strongest relationships forming business network. These cooperation concerns resources (their scarcity or slack) and decisions are made by decision-makers (actors). It is obvious that these components fit the individual dimensions of the ARA model, which forms the backdrop for further analyses and final conclusions in this paper.

5. Sustainability and Resilience of Business Networks—Resources View

Resource refers to anything that is required by an organism, organization, system, or society to achieve objectives. In the management area, organization is the primary unit of analysis. In that line, resources are owned and controlled by the firm which refers to the Resource-Based View (RBV) theory, which was introduced by Barney [26], and conceptualizes competitive advantage as arising from firm-specific resources that are valuable, rare, inimitable, and non-substitutable. In this perspective, resources are fundamentally conceptualized as assets and capabilities that are either possessed or governed by distinct organizations and can be strategically utilized to attain enhanced performance outcomes. Consequently, the organization is regarded as the principal unit of investigation, and inter-organizational relationships are generally viewed as external instruments through which organizations may obtain or capitalize on supplementary resources. In contrast, the IMP perspective offers a fundamentally relational and interaction-based view of resources. Drawing on the ARA framework [1], and scholars argue that resources are heterogeneous, interdependent, and embedded within networks of relationships. From this perspective, numerous strategically pertinent resources cannot be credibly assigned to an individual firm but are rather embedded within the continuous interactions among various agents. These relational resources materialize through sustained engagement, reciprocal adaptation, and collaborative problem-solving over an extended period [68]. Relational resources are not owned or fully controlled by any one actor; they are accessed and mobilized through participation in a relationship. Examples include relationship-specific knowledge, trust, shared routines, adapted technical interfaces, and access to partner resources and networks [1]. The value of such resources is fundamentally contingent upon context and is influenced by prior interactions among the involved parties as well as the broader network within which the association is situated. As a result, relational assets are primarily non-commodifiable and cannot be duplicated beyond the particular relational context in which they have emerged.

Resources play a pivotal role within business networks, and their role in achieving resilience and sustainability of organizations and business networks is undeniable. Baraldi with co-authors [12] noticed that the development and protection of a company's own resources is a way of achieving sustainable competitive advantage. Business networks actors are indeed not altruistic by nature since they develop relationships to achieve their economic goals while accessing new resources [1]. Resources consequently constitute the substance of business interactions [1,69]. Among these, IMP research distinguishes social resources including business relationships and organizational units from technical resources made of products and facilities [12,69]. And among social resources, business relationships are of first importance since they support any access to other types of resources: without social ties among business networks, no business can exist. These resources can be combined in many ways and the value of one resource emerges in the interaction with all other resources [1,69]. This contributes to the inherent social characteristic of business networks. Indeed, because of the heaviness and variety of resource interactions, business networks form patterns of interaction between many organizations and many individuals [70] where resources are dynamic per se, emergent and context-dependent [12]. Through resource recombination, business networks evolve and adapt over time in a "continuity of change" [1,2], resource scarcity leading to new resource combinations within business networks [11,19]. With such an emphasis on interaction and emergence within IMP research, one could expect substantial research on the social dimension of the impact of turbulent times on business networks, especially regarding the adaptation to sustainability challenges. Yet, to our knowledge, still, few papers investigate the role of business relationships or relational resources in this context. Runfola with co-authors [13] underlined the importance of relational dynamics for resilience during COVID-19 as "resilience on a relational level implies that the business relationship can be recovered and developed further even after an adverse event" (p. 148). Their case study demonstrated that social bonds in business relationships are a "way to face the uncertainty of the exogeneous event" (p. 150). This finding resonates with conceptualization of social capital within a business network [14]. For them, social capital is a crucial social resource that facilitates resource exchange, builds trust, and strengthens relationships, contributing to the overall resilience of the network, especially in business contexts facing a high degree of uncertainty. Bondeli & Havenvid conclude their research with an important point: they demonstrate that in Russia, "solutions are devised jointly in existing, albeit reconfigured or reactivated relationships", but more than that, contrary to what most management studies focusing on performance in their analysis of resilience or sustainability assume, resilience is not a matter of independence of firms or interdependence within business networks but "which level interdependencies predominantly will be built on: organizational or personal" [14] (p. 391).

Authors of papers about resilience and network (in the streams 5A–B) analyzed aspects of resilience in many kind of networks, like: humanitarian aid network [47], crime and terrorist networks [71], inland waterway network [50], forestry supply chain network [72], urban ecological network [51,52,73], metro network [53], R&D network [54], road networks [74,75], disaster response networks [76], or the role of circular economy practices in industrial network resilience during crisis [77], or influence on organizational resilience [78]; also, aspects of resilience in supply chains under price competition [79] and security aspects of resilient networks [80]. The majority of papers are in regard to supply network resilience. Azadegan and Dooley [48] explained a typology of resiliency strategies linked to different types of collaboration within and between supply networks: micro-, macro-, and meso- level supply network resilience. Micro-level resilience manifests when purchasers and vendors engage in direct coordination regarding risks. Macro-level resilience is observed when enterprises, encompassing rivals, unite with entities such

as governmental bodies or trade associations to oversee or regulate prolonged supply chain vulnerabilities. Meso-level resilience surfaces when various supply networks engage in collaborative efforts to address short- to medium-term supply chain risks. Datta [81] studied supply chain resilience against disruptive events and indicated categorization of such disruptions: (1) unexpected events, (2) internal practices, and (3) complexity. These issues should be taken into account when collaborating in order to enhance the resilience of the network (at all three mentioned levels). Collaboration means ability to better respond to disruption through creation of a community of supply chain partners having shared vision and commitment [82]. Li and Zobel [83] researched ripple effect in supply chain, when disruptions in one firms in a supply chain network can spread to their neighboring firms or other actors. The key, and primary, element of approach to risks and collaboration is to understand how supply chain managers construct resilient networks [56] as well as how they design the relationships between different components [84]. In those actions, the capabilities play a key role that cannot be overestimated. "Resilience capabilities define the ability of the supply chain to bounce back and quickly restore capacity after a disruption" [85] (p. 2) and authors concern: flexibility, visibility, velocity, redundancy, and collaboration. Yao and Fabbe-Costes [86] emphasized the great importance of an analytical approach to evaluate resilience at different levels of a supply network. As disruption continued, the local supply chain upscaled and adapted to recover. In the post-COVID-19 era, resilience is expected to remain a strategic priority, promoting continued investment in local operations to thrive with embedded resilience [87]. Many researchers investigated the implementation of sustainability goals in turbulent business environment [39] within firms or dyads, which is in the line with supply chains, but there is a lack of papers analyzing SDGs in business network context.

Authors of papers about sustainability and networks (in the streams 5C–D) analyzed aspects of sustainability in different areas. Bag with other co-authors [49] founded that organization culture significantly influences the workforce behavior and contributes to the advancement of SDGs and building good relationship with suppliers which ultimately results into increased flexibility and innovativeness. Here, we can refer to resilience because flexibility and innovativeness are crucial element in strengthening organizational resilience, at any level in business management. Aspects of technology transfer in supply chain network and its influence on sustainability were considered by Hamilton [88]. In technical manner network, sustainability was analyzed by Prata and Carvalho [89] with regard to dynamics of photovoltaic market. "Interdependence becomes significant in building coherent and sustainable network systems based upon human flourishing", what was noticed by Pavlovich [90] (p. 49). AlGhanem and Mendy [91] eyed that leadership approach (with focusing on competence) contributes to global economic development and the sustainability.

6. Relational Resources—Essence of Joint Actions

Relational resources in the business network perspective are relationship-specific resources that emerge through ongoing interaction between actors, are jointly developed and maintained, and provide access to knowledge, coordination, and opportunities that cannot be possessed or exploited independently of the relationship. In the analyzed group of articles, three levels of analyzing relational resources are visible: (1) as resulting from interactions between people within a single organization, (2) as appearing in cooperation between companies within micro-markets (supply chains), and (3) global, related (e.g.) to multi-stakeholder action for environmental protection. Precisely with regard to the latter group, Artiga-Purcell [92] analyzed the role of relational resources for recognizing the political ecologies that shape extractive processes all over the world, as well as Watt [93], who

considered that in common marine resource management. Independently of the level of consideration of these issues, Li and co-authors [94] analyzed relational resources through 3 measurement items: close coordination or collaboration with business partners, sharing information among business partners, and to recruit staff with good communication skills. That scale was adapted from Shou and others [95] who concluded in their study that relational resources have a positive effect on firm performance. De Clercq and Pereira [96] pointed out that relational resources concern not only cooperation between companies but also between staff in organizations (i.e., social interaction and goodwill trust). Seepana with co-authors [97] added that "managerial ambidexterity complements the relational resources to develop innovation ambidexterity if and only if both managerial exploration and exploitation are applied simultaneously" (p. 1969). The importance of individual resources of the entrepreneur and the relational resources of the firm was analyzed in [98]. In the next paper [99], authors underscored that heterogeneous relational resources have a stronger and more significant influence than direct and indirect resources, although all three groups make up social capital. According to Chou, Chen, and Liu [100] inter-firm relational resources concern: reliability, cost, compatibility, and customer orientation. In paper [101], authors accentuated three critical relational resource elements in supply chain partnerships: resource specificity, resource complementarity, and supply chain collaboration. Parente et al. [102] gave emphasis to the buyer's trust. Regardless of the type of relational resources, as the name suggests, they arise in relation, which are influenced by people's skills and development of operational skills in the supply chain was pointed in [103]. The importance of learning orientation for mobilizing relational resources were analyzed Iyer with co-authors and published in [104]. In that area of management, Fu [105] indicated the role of relational resources in the knowledge management, especially relational routines and relational coordination. Also Gretzinger and Royer [106] distinguished three relational resources: team-oriented interdependencies, knowledge-sharing routines, effective governance. Trust and relationship effectiveness are the important relational resources [107] and they are directly related to (and absolutely necessary) for the realizing the SDGs, which is directly in line with SDG 17 (Partnerships for the Goals). The best conclusion to this part of the discussion comes from the article [108]: "The increasing recognition that contemporary organizations seek to create and sustain value through interaction, relationships and networks, mandates understanding of the mechanisms by which relational resources are mobilized to provide competences" (p. 466) for different actions, also in the context of sustainable development goals.

The best-known and most widespread model for conceptualizing and analyzing relational resources in a business network is, as mentioned before, the ARA Model. The model posits that business networks are built upon three interdependent and interwoven layers: Actor Bonds (companies, individuals, key functions within companies, also social capital), Resource Ties (the way tangible and intangible resources of different actors are linked, because no company owns all the resources), and Activity Links (coordination, adaptation, and interdependence of activities between actors). The authors of [104] underline key inimitable partnership (relational) resources: (1) collaboration (coordinated interfirm exchanges), (2) resource specificity (idiosyncratic resources to a partnership and are inimitable in nature), and (3) resource complementarity (resources pooled by partners as collective, i.e., complementary resources). Dyer and Singh in their well-known paper [109] (with 8677 citations in Scopus database) highlighted four key sources of relational rents (determinants of relational rents), where to search for relational resources, which is visualized in Figure 3.

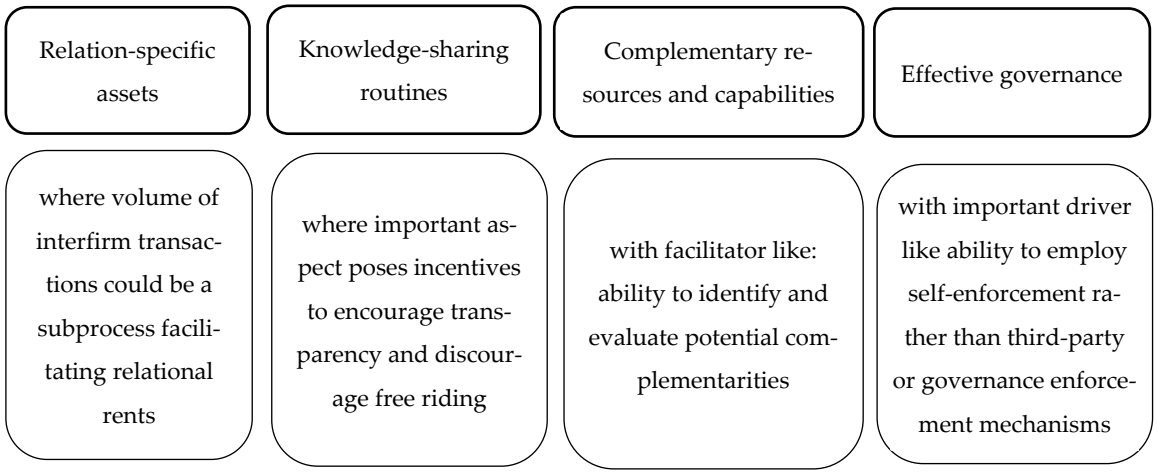


Figure 3. Sources of relational resources. Source: own elaboration based on [109].

7. Common Goals—Sustainable Development

Sustainability was defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" in 1987 by the United Nations Brundtland Commission [35]. The operationalization of sustainable development is linked to the implementation of measures aimed at achieving sustainable development goals. Donkor and co-authors [110] (p. 1) indicated that SDGs "offer a blueprint for global peace and prosperity, while conserving natural ecosystems and resources for the planet". Actions in the corporate sector are linked with achieving (or quite the opposite) SDGs and Martínez-Falcó with co-authors [111] noticed acceleration in scientific production of issues of SDGs in the business sphere, since 2015. There are plenty of articles focused on SDGs, with showing among others: synergies in a complex network framework [7], influence on the prioritization of macro policies in different countries [6], linking goals with different communities [112], and benefits and trade-offs among those goals [113]. The interlinkages between SDGs reveal that certain goals, such as SDG 1 (No Poverty) and SDG 3 (Good Health and Well-Being), have synergetic relationships with many other goals, indicating that progress in one area can facilitate advancements in others [8]. It is a co-benefit relationship, when progress in one goal supports another [114]. Some SDGs, like SDG 12 (Responsible Consumption and Production), show significant trade-offs with others, emphasizing the need for careful management of resources to avoid negative impacts on sustainability [115]. The Sustainable Development Goals (SDGs) exhibit profound interconnections, characterized by intricate dependencies and relational dynamics that necessitate comprehensive, contextually responsive methodologies for their effective and efficient execution. This implies a need to adopt and consider all aspects of sustainability in the business and management disciplines. Lee [116] analyzed the trends in SDG studies (237 publications published between 2015 and 2021) in business and management and finally indicated five clusters of state-of-the-art: technology and innovation, education and human resource management, CSR and firm performance, supply chains and governance, and business strategies.

"Concrete goals put pressure on businesses to initiate sustainability practices, depending on the nature of the business" [116] (p. 1) and organizational milieau. SDGs are intentionally interconnected and the way to put them into consideration is taking practical actions in social, economic, and environmental dimensions of sustainable development. These three spheres were indicated for the first time in a report published under the auspices of the United Nations, titled "Who Cares Wins" [117]. ESG creates the dimensions for taking and reporting actions SDGs oriented. "Integrating environmental, social, and

governance (ESG) reporting with the Sustainable Development Goals (SDGs) is important for achieving corporate sustainability" [118] (p. 1). Au and other authors [119] underlined that the relationship between ESG practices and economic performance is complex. In paper [120] authors were mapping of ESG pillars with the 17 SDGs and they showed "that there are particular SDGs and targets which are more relevant to the business sector than others" (p. 1). They indicated that SDG 13 (Climate action) is situated only in Environmental dimension, while SDG 1 (No poverty) is only located in the Social sphere, whereas all SDGs in Governance dimension occur simultaneously in other areas, even if SDG 17 (Partnership for the goals). That goal is like an umbrella for the other goals, because "achieving the SDGs requires close collaboration, cooperation and coordination among all stakeholders to share responsibility and turn intentions into actions" [121] (p. 12).

The last searching stream of full papers concern on resources and SDGs. The set of 31 papers could be divided into four groups of aspects, according to the main topics covered in them: resources (1), cooperation (2), human resources, and (3) macro-level (4).

Resource aspects (first group) refer to natural resources [122] in most of the articles analyzed, like: linking them with SDGs [123], analyzing water resources [124], and their scarcity [125] or the role of minerals [126], even marine macroalgae [127]. In reference to the SDGs 1&2, Tiba [128] analyzed fair natural resource revenue management (with regard to Africa) or the effect of the resources' abundance curse and environmental degradation to achieve the SDGs [129]. Resources were also analyzed in a wider approach like resource-based view perspective within global energy firms [130], sustainable development of resource-based cities [131], or the role of digital resources in achieving the SDGs [132].

The second group of analyzed papers regards to cooperation aspects. Yang with co-authors [133] underlined that partnerships for the goals (SDG 17) are crucial for improving resource efficiency, environmental impact, and operational effectiveness. Prates et al. [134] analyzed the Resource Nexus concept as a systemic solution to the sustainable management of environmental resources through the consideration of synergies. According to [135] interaction mechanisms of resource is critical for achieving sustainable development goals (SDGs). These issues were analyzed in a focused manner in the following topics: ecological Footprint in Emerging Economies [136], carbon reduction in BRICS countries [137], creating the tool for heritage management guide personnel responsible for cultural heritage resources in the implementation of SDGs [138]. In turn, authors in paper [139] advocated for global collaboration and sharing of green mining technologies to accelerate the industry's transition to a sustainable and responsible future and boost SDG achievements worldwide.

The third group of papers was titled "human resource aspects", regarding two levels of action—individual organization and network. In a single entity human resource system improves transparency and communication fosters engagement, employees feel more aligned with organizational goals [140]. In that line, Chaudhuri with co-authors [141] indicated that the dynamic capabilities of family firms to achieve SDGs. At a higher, it is important to create human resources network [142]. Kurniawan [143] proposed model advances theory by extending HRM beyond organizational boundaries, offering Sustainable HRM as a boundary-spanning and original perspective that links people management to global sustainability agendas.

The last (fourth) set of articles groups macro issues which influence the effectiveness of action towards SDGs. The literature points here to the role of: policy [144], financial technologies (fintech) [145–147], natural resource dependence and environmental-related technologies [148], technological innovation, and natural resource management [149]. Nassar with co-authors [150] (p. 9) took notice of international non-governmental organizations which shaping a large part of the development and humanitarian agenda of sustainable development, especially regarding the first and second Sustainable Development Goals

(SDGs) related to ending poverty and hunger worldwide. Hsu [151] indicated that the core competence (system of knowledge creation that helps the sustainable development) and core resource (the dominant one and associated with them like partnerships, and collaboration) features have a positive association with the achievement of SDGs.

8. Discussion

It is evident that there are numerous distinct domains of issue in resilience and sustainability and networks, as confirmed by the conducted literature review. However, there exists a deficiency of theoretical frameworks or methodologies delineating the correlation between resources (inclusive of relational resources) and the impacts that facilitate the attainment of sustainable development objectives. Sustainability, resilience, business networks, and resources are broad concepts, and the relationships between the terms themselves and specific actions are even more diverse. Cooperation aimed at achieving the SDGs is necessary at various levels of activity of companies and institutions and between them. The nature of these activities depends directly on the type of network (i.e., the type of products and services, the nature of the industry, and the number of entities). Companies in the energy sector are closer to achieving SDG 7, while the food industry, SDG 2. This is natural, but regardless of the circumstances, cooperation is essential, which is a factor that clearly links activities in business networks with the implementation of SDG 17. Cooperation is the basis for broad activities, and people are at its core. People contribute to effective and efficient actions, but they also constitute a barrier to their implementation. That is why issues such as human resource management, awareness of the impact of today's actions on tomorrow's life, social capital building, and cooperation between organizations, in which relational resources play an underestimated role, are so important.

8.1. Becoming More Aware of the Value of Interdependences Within Business Networks

To move forward Bondeli's & Havenvid's effort to bring the social in front of the scene of resilience and sustainability, we believe it essential to emphasize the implications of being interdependent and interconnected actors within business networks. IMP researchers defined as resource heaviness the network structure resulting from resource interaction within business networks [10]. This heaviness is regarded as an antecedent to efficiency in stable environments but as a path dependence in turbulent times [69]. We conversely assume that this heaviness constitutes a chance for business actors to address the systemic nature of sustainability provided that these actors become fully aware of the value of interdependences within business networks.

Relational sociology postulates that in real life, "nothing exists outside relationships and interactions between individuals" [70] (p. 1456): in other words, human beings are inherently interdependent, and their identities, motivations, and expectations are shaped through symbolic interactions with other individuals. In such interactions, individuals get indications of what to do and how to behave within their social groups and within society [152]. Individual agency is thus shaped in relation with others. In business networks, managers' decision-making is influenced by the symbolic interaction they have with their business counterparts, leading to a symbolically shared and commonly meaningful world of interaction among the same business networks. Business symbolic interactions also shape organizational reflexivity and enable collective action. Moreover, Abrahamsen and co-authors [153] proposed the concept of Network Picture to help managers broaden their horizon while taking time mapping all their ties to companies with which they are in relation. They demonstrated the strength and the benefits of becoming aware of all the interdependencies companies are a part. We thus recommend researchers systematize Network Picture projects while helping managers draw their map of actors with which they

are in relation and assess the criticality of first the relationship itself, and second, the type of resources this relationship enables them to access. So doing, managers would become much more aware of their interdependences and get a broader picture of the impact of their decisions. In these Network Picture workshops, managers would also name people with whom they do business to stimulate the feeling of belonging to a shared business network. Including this human part into business indeed constitutes the first condition to respond sustainability issues at the business networks level. Identifying the factors influencing managers' Network Picture is a fundamental action to achieve broad long-term prosperity while incorporating the volatility of the environment and the resulting risks, notably for future generations [40]. So, there is a need to identify common goals in business network and then understand the nature of the related threats [3]. These initial steps pave the way for joint decisions and cooperation within the business network.

8.2. Common Goals—Building Resource Stewardship Among Business Networks

Our SLR on the relation between resilience, sustainability, and business networks highlighted the prominence of relational terms such as "trust", "commitment", "satisfaction", "cooperation", and "innovation". These terms express a high level of expectations regarding business relationships and sustainability. Tura et al. [19] demonstrated multiple tensions within business networks implementing sustainability strategies among which divergent or conflicting interests. Their literature review showed that "sustainability issues are often broad and complex and require an understanding of the impacts and consequences experienced and perceived in larger networks" (p. 223). Their case study also emphasized that most tensions like "increased monitoring and controlling needs", "dependence on key suppliers", "reduced power positions", "defensiveness against new regional sustainability policies", or "greenwashing concerns" relate to a business-as-usual and competitive mindset where companies rely mostly on themselves and direct business partners when developing sustainable strategies. According to us, this illustrates the second condition to the development of resilient and sustainable business networks: breaking with the isolated view on sustainability strategies and decision-making. Here again, Network Picture workshops can help companies understand the shared interests among business networks either in terms of raw materials, components, or energy consumption or compliance with regulation. Such workshops can help companies define shared standards of sustainability. When interacting with other companies in such workshops, managers can realize how the survival of their firm depends on their direct and indirect suppliers and their customers survival. This new awareness can form the basis for the search of business network resilience over the isolated performance and efficiency of their firm. That would mean being suboptimal in the short term but more prepared to major change in the mid and long terms.

In line with Grumbach & Hamant [20] who renovated the concept of resilience in the light of tensions between individual and collective goals, we indeed consider essential to break with the search for permanent optimization if companies want to adapt to climate change and all sustainability concerns. First, it implies to take some distance with the individualism inherited from micro-economics and positivism to become as responsive and adaptative as natural ecosystems. Grumbach & Hamant [20] alert us regarding the overreliance on technology in the response to sustainability issues. For them, Earth is not an "optimizable object" where nature is controllable and only a source of economic opportunities (p. 2). They propose the concept of suboptimality that is "a state of in which randomness, heterogeneity, slowness, redundancy and other forms of inefficiencies at individual level lead to robust collective outcomes". As biologists, they observed suboptimality in most natural ecosystems. For business networks, suboptimality means

accepting the heterogeneity of firms, less reliance on technological innovation to foster cooperation, and the acceptance of the diversity of paths to sustainability as "the right balance has to be found between individual and collective needs to ensure the diversity required for resilience" [20] (p. 9). In the case of resource scarcity, we assume that a suboptimal way to build resilient and sustainable business networks lies in co-defining resource stewardship where the collective needs are favored over individual interests.

8.3. Developing Resource Stewardship Towards SDGs Through Relational Resources

Our main research question focuses on developing business network resilience and sustainability in a context of scarcity of resources based on relational resources. In a nutshell, it could be answered by indicating the role of decision-makers in every organization to manage everything collectively in business network. But this is a cynical simplification that overlooks the complex diversity of entities within business networks, including goals, company characteristics, environmental factors, and decision-maker personalities. A suboptimal perspective to sustainable business networks means accepting the diversity of individuals within the organizations forming the business networks. It should also be taken into account that there exists no universal applicable methodology that can be deemed across all organizations to incorporate resilience and sustainability into business networks [42,43]. Sustainability within business networks indeed questions their governance. Developing business network resilience and sustainability in a context of resource scarcity thus requires a multifaceted approach that emphasizes collaboration, relational resources, and a shift towards collective needs—that we define as "resource stewardship".

Historically, the term "stewardship" referred to the means of protecting a kingdom when the king was either physically absent due to war or crusade, or too young to rule [154]. Block [154] defines "stewardship" as the "propensity to be responsible for the well-being of an entire organization by serving others, rather than controlling them" (p. 24). More simply, for Block, "stewardship" consists of feeling responsible without a desire to control or submit. The theological origin of the concept of "stewardship" is reflected in the notion of service associated with it: for Block, "this notion of service, at the heart of stewardship", only exists if it fulfils four conditions [154] (p. 25). First, stewardship is based on the existence of a balance of power, in the sense that what we seek through stewardship is not the domination of others: we do not impose our views to them but rely on their decision-making capacity. Second, in stewardship, collective commitment prevails over the defense of one's own interests. Then, each person in the organization is invited to participate in defining the objectives and culture of this organization. Finally, stewardship assumes that within an organization, there is a fair sharing of value between all levels of the organization, each level increasing its resources in proportion to its contribution to the collective well-being of the organization. From this definition of service flows the governance mode of stewardship: the long-term development of relationships based on trust constitutes the central objective of stewardship. To achieve this, stewards must adopt a logic of partnership with customers and other levels of the organization, empowerment of managers, and service for the collective interest. Stewardship is, therefore, based on a social contract linking individuals and their organizations at the microeconomic level, and several organizations together at the macroeconomic level [155]. The social basement of stewardship consists of the personal bonds that individuals have to other individuals within their organization or their business networks.

Resource stewardship shares this social view in fostering collective action over firms' individual interests in the exploitation of finite resources [156], which is in line with the 2030 Agenda and SDGs. Relational resources appear through participation in a relationship (i.e., trust). If actor in business network takes conscious actions related to a given resource,

it will obtain relational rent (i.e., strategic payoff—market power). "Relational rent as a supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners" [109] (p. 662). The visual relations between the analyzed concepts are shown in Figure 4.

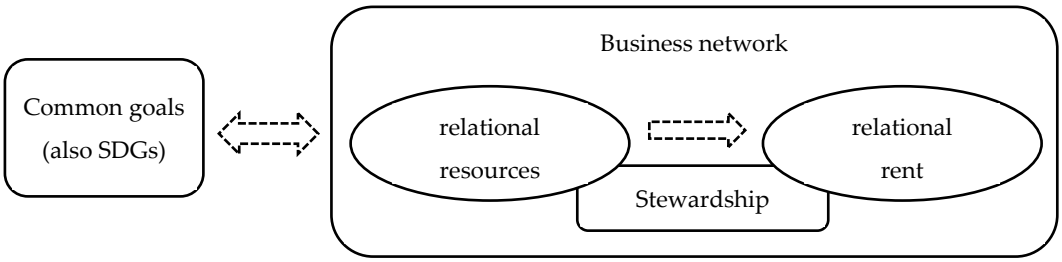


Figure 4. Interdependence between core concepts. Source: own elaboration.

The SDGs provide the destination, create comprehensive "what". Resource stewardship is considered as "how". Resource stewardship is the ethical responsibility to manage resources (natural, human, financial) with care and foresight for current and future generations. It is doing by actors through actions, so stewardship is like a mood between ARA components. That's why resource stewardship is the fundamental operating principle needed to achieve the SDGs. Achieving these goals is not a task for individual organizations. Also it is impossible to reach the goals by exploiting resources in a business-as-usual manner. Effective action requires cooperation between many entities, in organizational terms within the business networks. During that collaboration, relational resources are arising. Relational resources are not owned or fully controlled by any one actor; they are accessed and mobilized through participation in a relationship. Through localized interactions at collective events within trade associations, firms can cultivate a unified comprehension of resource utilization and establish prioritization strategies. Some local initiatives can lead to collective strategic resources purchasing or orchestration of network innovation [157]. Without strong relationships and trust, resource stewardship fails. They activate the "how-to" for tangible SDGs progress. For example, SDG 12 (Responsible Consumption) shifting to a circular economy depends on new collaborative business models (industrial symbiosis), supply chain partnerships based on transparency, and consumer-producer trust. Successful climate adaptation (SDG 13 Climate Action) rests heavily on community cohesion, local knowledge networks, and trusted channels for communicating risk. Mitigation requires unprecedented global cooperation (a massive relational challenge under SDG 17).

"Partnerships for the Goals" (SDG 17) is like un umbrella for activities aimed at achieving the SDGs. Activities in various business networks are profiled to specific goals, including SDGs. This is natural, but regardless of the circumstances, cooperation is essential, which is a factor that clearly links activities in business networks with the implementation of SDG 17. Relational resources are the "glue" that makes stewardship of physical and human resources possible with regard to SDGs. Therefore, as part of a summary of a broad analysis and with a focus on the practicality of the observations, it seems necessary to draw attention to two issues. Firstly, how to link relational resources and stewardship with specific SDGs. Secondly, looking at it from a level up, placing it within the business network.

The integration of Sustainable Development Goal 17 (Partnerships for the Goals) with the notions of relational resources and resource stewardship establishes a robust, systems-oriented framework for the attainment of sustainable development. This perspective transcends the conventional view of resources as solely financial or physical entities, advancing towards a comprehension that regards them as intrinsically intertwined with

relationships and trust. The connection is profound: SDG 17 is essentially a call for the active stewardship of relational resources on a global scale. Table 2 presents examples of how it works in practice.

Table 2. SDG 17 as a stewardship framework for relational resources.

SDG 17 Target Area	Link to Relational Resources	Manifestation as Resource Stewardship	Resource Rent as Long-Term Outcome
Finance (target 17.3)—mobilize additional financial resources.	Trust is essential in relationships. Donors and investors require confidence in the effective use of funds. Recipients need assurance that support aligns with their priorities rather than external interests.	Stewardship fosters trust via transparency and mutual accountability. It means managing financial inflows not as gifts, but as shared investments in a common future.	It requires co-developing frameworks for tracking impact, fighting corruption (SDG 16), and ensuring funds build local capacity rather than dependency.
Technology (target 17.6–8)—enhance knowledge sharing and access to technology.	Knowledge networks and collaborative capacity constitute essential relational assets. The term "resource" encompasses not only technology but also the interconnections among participants.	Stewardship involves creating open innovation ecosystems and protecting them from becoming extractive (e.g., patent walls).	It's about co-owning solutions which influences gaining other goals i.e., building resilient infrastructure and foster innovation (SDG 9).
Capacity building (target 17.9)—support national plans to achieve all SDGs	Mutual understanding is the fundamental relational resource. Capacity building necessitates collaboration.	Stewardship means investing in long-term peer-to-peer learning networks and institutions.	It influences on quality of education and promote lifelong learning opportunities for all (SDG 4).
Multi-stakeholder partnerships (target 17.16–17)—encourage effective public, public-private, and civil society partnerships.	This is the purest expression of relational resources. The partnership itself is a resource—a web of relationships with a range of aspects.	Stewardship of a partnership means actively nurturing inclusivity, shared purpose, transparent governance, and conflict resolution mechanisms.	Stewardship is a moderator between relational resources and resource rent supporting the achievement of benefits across all SDGs.

Source: own elaboration.

The issues highlighted in Table 2 are examples of specific relations. The connection is profound, SDG 17 is essentially a call for the active stewardship of relational resources on a global scale, which refers to the second part of the title of this article: "...the role of relational resources facing SDGs". These issues, for the effectiveness of actions (achievement of SDGs), are (and should be) considered as part of a larger puzzle—the business network.

8.4. Business Network—Shaping Resilience and Sustainability

In order for the benefits for sustainability to be long-term, it is necessary to ensure the resilience of the network—i.e., the elements that shape it—"Towards sustainable and resilient business networks", that is, the first part of the article title. Therefore, in order to complete the analysis for the purposes of this article, it is necessary to gather the analyzed issues in one place. To achieve this, it is necessary to supplement the issues visualized in the Figure 4, both preceding and following the indicated relationship "relational resources—stewardship—resource rent". Business network and relationship between components create relational resources and also influence next steps. The components of business networks (issues preceding relational resources), described in the analyzed articles, and their influence on resilience and sustainability of these networks are presented in Table 3.

Table 3. ARA framework—components towards sustainable and resilient business networks.

Contextual Conditions for Business Networks		
- kind of network (industry, territory, scope of activity) [47] - macro level of network (business network collaboration with governmental bodies or trade associations) [48] - market requirements [59] - meso level of network (Cooperation between various business networks engage in collaborative efforts) [48] - micro level of network (direct cooperation and coordination) [48] - multiple tensions—divergent or conflicting interests [19] - policy [144]		
ACTORS	**RESOURCES**	**ACTIONS**
- approach to risks and collaboration [56] - awareness of the resilience and sustainability concept [46] - buyer's trust [102] - degree of centrality, number of ties between actors [58] - dynamic capabilities [141] - effective governance [106] - human's motivations and expectations [70] - interactional dynamics among actors [2] - international non-governmental organizations [150] - leadership approach [91] - learning orientation [104] - manager awareness of interdependences [70] - managerial ambidexterity [97] - natural resource management [149] - network access or reach [65] - partnership [104] - people's skills and development of operational skills [103] - relational rent [109] - resource stewardship as social view [156] - stewardship [154] - tensions between individual and collective goals [20] - tensions within business networks [19] - trust [65] - trust and relationship effectiveness [107]	*Relation-specific assets:* - business relationships [69] - human resources network [142] - network complexity [66] - resource specificity [101] - team-oriented interdependencies [106] *Knowledge-sharing routines:* - knowledge-sharing routines [106] - system of knowledge creation [151] - communication skills [94] *Complementary resources and capabilities:* - resource complementarity [101] - technological innovation [149] - environmental-related technologies [148] - financial technologies (fintech) [145] *Effective governance:* - natural resource dependence [148] - social capital [66] - human resource management system [143]	- close collaboration and coordination [94] - collaboration [104] - communication process [65] - cooperation between companies [96] - cooperation between staff in organizations [96] - deploying managerial processes (through dynamic capabilities) that reconfigure resources [158] - design the relationships between different components [84] - identification of common goals [3] - knowledge management (especially relational routines and relational coordination) [105] - relationships and interactions between individuals [70] - sharing information among business partners [94] - supply chain collaboration [101] - understand the nature of the related threats [3]

Source: own elaboration.

The first row of Table 3 presents the contextual conditions that shape how business networks form, operate, and perform. They determine opportunities, constraints, and the overall effectiveness of the network. The ARA framework helped to segregate the individual issues described in the analyzed articles. Furthermore, in the process of allocating resources, the categorization of relational resource origins and the concept of rent as delineated by Dyer and Singh [109] was employed.

The elements included in the ARA model form relational resources, which then affect the resilience and sustainability of business network. A summary perspective of the role of relational resources in creating sustainable and resilient business networks is presented in Figure 5, as the comprehensive result of the analyses included in this article.

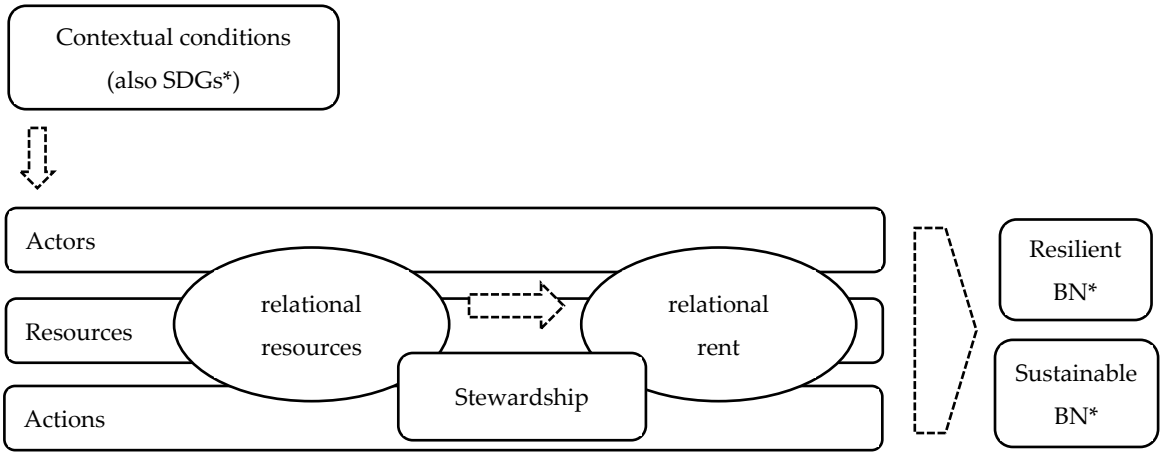


Figure 5. The role of relational resources towards sustainable and resilient business networks—perspective and components of analyzed constructs. Source: own elaboration. * SDGs—Sustainable Development Goals; BN—Business Network.

Contextual conditions form a business network, also taking into account sustainable development goals. SDGs are not silos but the set of seventeen mutually related objectives [8] with accompanying co-benefits and trade-offs among them [113]. In practice, there is a need to prioritize targeted actions towards gaining the goals [6] taking into account the intrinsic and extrinsic characteristics [112], like organization, business network, community, country etc. ARA framework allows to segregate components towards sustainable and resilient business networks (shown in detail in the Table 3). Relational resources are created through cooperation and relationships in business network. Stewardship reinforces the acquisition of relational rent (interdependence between these concepts were shown in Figure 4). This affects the resilience of the business network. Resilient business network, in accordance with the description outlined at the beginning of this article, "is an interconnected ecosystem of organizations designed to proactively anticipate, absorb, adapt to, and rapidly recover from disruptions while maintaining core functions and creating long-term value. It prioritizes continuity, flexibility, and evolution in the face of risks". Organizational resilience is treated often as part of sustainability [44]. So, the level up after resilient BN is sustainable BN. However, this is not a straightforward relationship, where a resilient network is a prerequisite and a step towards a sustainable network. However, this is not a simple relationship in which a resilient network is a prerequisite and a step towards a sustainable network. Even if cooperation between actors within a network contributes to the achievement of SDGs, the network may not be resilient to certain threats (e.g., a network of hotels and companies cooperating on COVID-19). The essence is to understand the nature of the threat [3] and create appropriate preventive and reactive actions. At the beginning of the paper, we underlined that "sustainable business network is an interconnected ecosystem of organizations that collaboratively operate under shared principles of environmental stewardship, social equity, and long-term economic viability (in the ESG line). Its core purpose is to create systemic value beyond individual profit, ensuring resilience and positive impact for all stakeholders and the planet".

In a nutshell, relational resources are fundamental to building resilient and sustainable business networks by fostering cooperation and shared capabilities, enabling organizations

to adapt to different challenges (long-term and sudden—unexpected) and work collectively towards sustainable development goals.

9. Conclusions

The first research question was about defining resilience and sustainability in the prism of single organization and network, as well as identification of the interactions between these issues. Organizational resilience is treated as the ability to adapt to changes in the environment, both evolutionary and sudden events, which applies to both entities and business networks. Sustainability is about satisfying the current needs while ensuring that future generations retain the capacity to fulfil their own. More commonly indicated in the literature is the relationship between the two terms, that resilience is a component of sustainability. Several of the most contemporary scholarly articles addressing the examined issues suggest that "resilience is understood as a way to achieve sustainability" [159] (p. 1597) or Holgado with co-authors [160] (p. 877) proposed "resilience as the missing element in the pursuit of excellence in organizations that want to contribute to a more sustainable future". Duchek [34] analyzed organizational resilience through capability-based approach and formulated three stages of resilience: anticipation, coping, and adaptation. Pradana and Ekowati [159] reformulated them into six comprehensive stages: anticipation, coping, adaptation, absorptive, confronting, and sustainability. It underlines that sustainability is on the top of the pyramid structure of "maturity excellence" of organizations and business networks. Dynamic capabilities theory assumes that firms can deliberately orchestrate change by deploying managerial processes that reconfigure resources under conditions of environmental uncertainty [158]. However, in business networks, such reconfiguration is rarely unilateral. Resource development and change are shaped by existing resource ties, activity links, and actor bonds that bind firms together in networks and limit the scope of purposeful reconfiguration [161]. Relational resources are thus path-dependent not only within firms but across relationships, reflecting the history of interaction and adaptation among network actors. Aung & Fernando [162] pointed out that possessing the capability to anticipate, cope, and adapt to challenges, it may be classified as a resilient organization but also underlined that success in avoiding the adversity is not equivalent to resilient organization. The attainment of this aspired success necessitates intentional and systematic action—commencing the procedural activities and overseeing them to achieve the anticipated outcomes. The source of that river of actions is people, with their awareness and capabilities [163]. Capabilities are possesses by people, and managers make decisions regarding the direction of activities and the use of resources, that is why dynamic managerial capabilities are important [164], as well as employee attributes [165]. So, actors create the beginning, of everything.

Our SLR analyses reveal a lack of a universal and unambiguous method for strengthening organizational resilience and sustainable development at business network level. Therefore, defining these issues is contextual and embedded in each network picture. However, among the diverse approaches to these issues [36,67], the key role of relational resources emerged in terms like partnership, collaborative approach, cooperation between organizations and people, and resource and knowledge sharing. Therefore, an open and collective approach to cooperation prevails over individual decision-making in the pursuit of a sustainable and resilient business network. These findings answer the first research question (RQ1) what was concluded concisely in the Table 4.

Table 4. Answer for the first research question.

Research Question	Concise Scientific Answer
RQ1: How resilience and sustainability are defined at the level of a single organization and at the network level, as well as how the interplay between both concepts was studied?	Single organization level: **Sustainability**—as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [35]. **Resilience**—"the ability of an organization to absorb and adapt to a changing environment" [28] (p. 1).
	Business network level: **Resilient business network** is an interconnected ecosystem of organizations designed to proactively anticipate, absorb, adapt to, and rapidly recover from disruptions while maintaining core functions and creating long-term value. It prioritizes continuity, flexibility, and evolution in the face of risks. **Sustainable business network** is an interconnected ecosystem of organizations that collaboratively operate under shared principles of environmental stewardship, social equity, and long-term economic viability (in the ESG line). Its core purpose is to create systemic value beyond individual profit, ensuring resilience and positive impact for all stakeholders and the planet.
	Interplay between resilience and sustainability in business network Weber (2023) [44] highlighted two extreme relationships: **Organizational resilience as part of sustainability**, where organizational resilience as a prerequisite for organizational sustainability. This approach to describing the relationship between the two concepts indicated is more common than the second. **Sustainability as part of organizational resilience** where organizational resilience is treated as an overarching concept vis-à-vis sustainability.

Source: own elaboration.

Resources hold a critical significance in business networks, and their contribution in attaining resilience and sustainability is, per se, crucial. Initiatives designed to augment organizational resilience and sustainability predominantly underscore the distribution of resources, with a specific emphasis on human capital. Resources themselves are the foundation of business activity, and their technical diversity and relational value in terms of their use to achieve goals means that their scarcity could be critical. Business relationships are the most important and predominant resource in accessing other types of resources: they form the social capital of individuals and organizations that constitute the existence of every business network.

Our research highlights how actors within a shared business network can cooperate and build sustainable and resilient networks based on their business relationships, under three key conditions answering our second research question (RQ2):

1. Recognition of interdependence. Acknowledgement of interdependence of entities in business network is fundamental for cooperation. The decisions made by managers at the individual level are profoundly shaped by their interactions with network members. This consequently impacts the robustness and sustainability of not only individual organizations but also the larger business networks. Organizations, fully aware of their interdependent relations, can build resource stewardship among their business networks for the common good while creating shared objective.
2. Leveraging of relational resources. The key to resilience and sustainability in business networks facing resource scarcity lies in collective action from the social field, underpinned by strong relational resources. Cooperation is fostered when the focus extends beyond purely economic terms to include social responsibilities. These resources, which include collective and individual social ties, are vital for building resilient networks.

3. Shift towards collective action and resource stewardship. The ability for collective action to adapt to resource scarcity at a network level is a core condition for building sustainable and resilient networks. This implies that individual actors must be willing to engage in joint efforts. Synergy, as a keyword for cooperation between organizations, constitutes one of the strongest relationships forming business networks.

The sentence "How fostering resilient business networks through relational resources contributes to SDGs?" constitutes the third research question (RQ3). Fostering resilient business networks through relational resources significantly contributes to the achievement of Sustainable Development Goals (SDGs) by promoting collective action, resource stewardship, and enhanced cooperation. This approach moves beyond individual organizational interests to address systemic challenges and build shared value. In summary, fostering resilient business networks through relational resources contributes to SDGs by promoting a shift from individual to collective interests, emphasizing resource stewardship, and leveraging the power of collaboration and trust, particularly under the umbrella of SDG 17.

The overarching research question related to sustainability and business relationships, posed at the beginning of this study, is as follows: How to develop business network resilience and sustainability in a context of scarcity of resources facing SDGs? In the case of resource scarcity, we assume that a suboptimal way to build resilient and sustainable business networks lies in co-defining resource stewardship where the collective needs are favored over individual interests.

The most important resource in an organization is people (who create and work in the organization) and they are the most important pillar of a resilient organization. It is worth emphasizing that organizational capabilities are the result of individual capabilities, "It is no doubt that an understanding of resilient individuals provides a useful start in defining resilient organizations" [166] (p. 319). To effectively convince managers, it is crucial to frame stewardship not as a cost or a purely altruistic endeavor, but as a strategic imperative that enhances long-term resilience, builds adaptiveness and responsiveness to resource scarcity, and ensures the sustained well-being of both the business and its broader ecosystem. Rahman [167] indicated that "achieving B2B (business-to-business) sustainability requires understanding and developing a holistic framework that addresses real-world challenges by embracing resilient capability to face the turbulent business environment" (p. 1). This calls for a difficult change in the attitudes and behaviors for collective good, that prioritize the long-term best interests of a group over an individual's self-interests [156]—thus, for resource stewardship.

Authors of that paper assume that businesses should base their sustainability and resilience approach on strong relational resources [13]. Being fully aware of these relations of interdependence, organizations can indeed build resource stewardship among their business networks for the common good [168]. These issues are in line with the statement "We are not inheriting this planet from our parents, we are borrowing it from our children" [169] (p. 292).

Contributions, Limitations, and Future Research

The novelty of this paper is linking issues of resilience and sustainability with business networks, putting relational resources in the spotlight. Firstly, our paper comprehensively presents the results of a cascade analysis of the literature, both bibliometric and systematic. Secondly, the material presents nexus of resilience and sustainability in business network with a focus on relational resources. Finally, research findings promote the idea of taking collective stewardship actions in business networks versus individual economic focus,

during planning and implementation strategy of resilience and sustainability through the prism of sustainability development goals (SDGs).

While our article provides valuable insights into the role of relational resources towards sustainable and resilient business networks, several limitations should be noted. First, our analysis is based on a literature review, in which database selection, and inclusion and exclusion criteria, narrow the scope of the analyzed publications. Future research should be broad or narrow in theoretical scope, in line with the analytical goal set. Second, our analysis is theoretical in linking the area of resilience and sustainability with business networks. Thus, future studies should be empirical and seek to identify relations in practice, especially conditions, factors, and triggers of decisions towards resilient and sustainable business networks and the relationship between resilience and sustainability. Third, our work cascades various issues from the general to the specific, indicating that at the end the role of relational resources and people in coordinating actions for the common good. People are at the source of all activities, so further research (both theoretical and practical) should enter the field of human psychology and management of managerial attitudes and link it with broad social aspects.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su18052535/s1, Table S1: PRISMA 2020 Checklist. Reference [170] is cited in the Supplementary Materials.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. The list of full text papers for research stream 4–7.

Search Stream	Papers
4: nexus of resilience and sustainability	[58–66,171,172]
5A: network resilience	[47,48,50–54,56,57,71–74,76,77,81,83–86]
5B: resilient network	[79,80,87,173]
5C: network sustainability	[49,88,89,174]
5D: sustainable network	[75,90,91,175–177]
6: relational resources	[92–108,178]
7: resources AND SDGs	[122–151,179]
Additional articles identified under snowballing technique	[4–6,9,46,112,116,118,120,169]

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