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Wang, L., Müller, R., & Zhu, F. (2023). Network Governance for Interorganizational Temporary Organizations: A Systematic Literature Review and Research Agenda. *Project Management Journal*, 54(1), 35-51.

<https://doi.org/10.1177/87569728221125924>

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Network Governance for Interorganizational Temporary Organizations: A Systematic Literature Review and Research Agenda

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Abstract

Governance of interorganizational networks for joint project execution has become a popular research theme in recent years. However, little is known about how the knowledge in this field is structured and how to further develop it based on the given structure. This systematic literature review identifies three main categories of literature in this field: design of network governance, network performance, and theory in network governance. Each of these categories is further divided into subcategories, which are assessed for the timely development and current state of knowledge. This provides the foundation for the development of a research agenda, which includes configural understanding of network governance design, governing for temporary organizing particularities, and level-crossing theoretical development.

Keywords

Network governance, systematic literature review, temporary organizations, organization theory

Introduction

The volume of network governance (NG) research has increased rapidly in recent years. From network mechanisms (Jones et al., 1997) to drivers of governance mechanisms

(Verwaal & Hesselmanns, 2004), from governance models (Pirson & Turnbull, 2011) to NG for temporary organizations (Steen et al., 2018) and beyond. Here publications in the latter category, for example, show a compound annual growth rate of 11%, which indicates the fast-growing popularity of the subject. As part of this development, a number of review articles (Borgatti & Foster, 2003; Provan et al., 2007; Zaheer et al., 2010), provided a broader understanding of the field of NG per se. However, the broadness that the field of NG has grown to demands more systematic approaches that allow addressing specific aims, objectives, and research questions such as those related to interorganizational NG for joint temporary organizations. Recently published systematic reviews of networks in clusters addressed mainly the governance of geographical concentrations of interconnected companies, and not the field of global interorganizational NG for joint temporary organizations (Speldekamp et al., 2020).

This lack of systematic understanding is problematic since temporary organizing, defined as a reflexive structuration that makes use of temporariness with structure and agency (Bakker et al., 2016), is inherently different from permanent settings. The governance of interorganizational projects typically shares commonalities with NG, including multiple stakeholders, contractual and relational elements, and multilateral coordination (Roehrich & Lewis, 2014; Ahola et al., 2014; Oliveira & Lumineau, 2017). However, interorganizational projects are often characterized by paradoxes, such as temporary and permanent organizations, individual and collective identity, crafting and standardizing practices (DeFillipi & Sydow, 2016); some large projects even suffer from multiple institutional complexities (Pache & Santo, 2013, Qiu et al., 2019). These particularities challenge NG as introduced from general management settings and might lead to the failure of networks and/or projects. Hence, there is an intense need to clarify these particularities in terms of NG for the interorganizational temporary organization. An agenda for a structured research approach will allow the field to be investigated more deliberately and comprehensively, and its results to be more coherent than by relying on individual researchers to find their particular research topic through gap-spotting (Alvesson & Sandberg, 2011).

We define interorganizational networks along the lines of Jones et al. (1997, p. 914) as “a select, persistent, and structured set of autonomous firms (including nonprofit agencies) engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges.” Our focus is on the creation of these products or services through temporary organizations, made up of

resources assigned by the organizations participating in the network to undertake a unique, novel, and transient endeavor to deliver beneficial objectives of change (Turner & Müller, 2003). The article builds on suggestions by Sydow and Braun (2018) for furthering the theorizing of the interorganizational dimension of temporary organizing. Their work identifies three areas for further theory development, namely multilevel perspectives, processual understanding of relationships, and modes of interorganizational governance. The present article addresses the latter perspective by adopting the Sydow and Braun suggestions to go beyond the formal aspects of governance and consider the interplay between the *above* (such as the organizational field or the industry including the institutional environment) and *below* (such as the organizations collaborating in the project) when studying (interorganizational) projects (p. 9). We define this as the interplay between the interorganizational network and the projects. As temporary organizations (a term we use synonymously with projects, programs of projects, missions, etc.) become prevalent across industries, the absence of a systematic understanding of the governance of organizational networks that allow these temporary organizations to emerge hinders future advancement in an indigenous set of theories that can be applied to temporary organizations (Borgatti & Halgin, 2011; Steen et al., 2018). To that end, we ask:

RQ1: How is the theoretical landscape of interorganizational NG for joint temporary organizations structured, and what are the constituting dimensions?

RQ2: What research agenda is suggested, given the answer to RQ1?

The unit of analysis is the theory published on interorganizational NG for joint temporary organizations. The present article addresses these questions conceptually through a systematic review of the related publications. We follow Jesson et al. (2012, p. 104), who argue that a systematic literature review (in contrast to a traditional one) “is a research article that identifies relevant studies, appraises their quality, and summarizes their results using scientific methodology.” Emphasis is hereby on the use of a transparent and rigorous process for identifying all relevant studies, their categorization, and evaluation for answering specific research questions (Jesson et al., 2012). This is in contrast to traditional literature reviews, which typically build on probing and moving from one study to another, following up leads (Jesson et al., 2012).

The article will provide benefits for both practitioners and academics. The former group will be provided with insights into network designs and their particular performance issues and

strengths. Hence, this allows us to fine-tune networks for better performance. The latter group will be provided with an overview of the current understanding of the subject, as well as its underresearched areas, culminating in a structured research agenda for the future.

The next section outlines the methodology used for the systematic literature review. It is followed by an analysis of the selected literature for interorganizational NG for joint temporary organizations. The article ends with an agenda for future research and discussion and conclusion on the findings.

Methodology

Jesson et al. (2012) suggest that systematic reviews have a clearly stated purpose, questions, a defined research approach, and appraisal of the articles. By following an explicit research methodology, the weaknesses of traditional approaches shall be overcome (Harden & Thomas, 2010). These weaknesses may include biases and philosophical mix-ups through heterogeneous sampling (Petticrew, 2001), or issues with the quality of assessment (Harden et al., 2004; Tranfield et al., 2003). However, Jesson et al. (2012) and Curran et al. (2007, p. 305) point out that literature in business, management, social sciences, and across disciplines often differs from the methodology's original discipline—medicine and healthcare—in terms of “poorly defined topics; inconsistent use of keywords and controlled vocabulary; abstracts that do not effectively communicate the content of the article or are not accessible in bibliographic databases; and resource and technology problems.” Therefore, Jesson et al. (2012) recommend starting systematic reviews in these disciplines by scoping the field in form of a traditional review, followed by a systematic review using a transparent process of inclusion/exclusion criteria and quality appraisal. We follow this suggestion and their recommended process by:

Phase 1: Mapping the field through a scoping review. We conducted a traditional literature review to scope the amount of relevant material, by identifying the most often cited texts and following up on the references therein. This gave the first impression of existing knowledge and knowledge gaps.

Phase 2: Comprehensive search. Here we entered into the systematic literature review by using the process described as follows. We searched in keywords, titles, and abstracts, using Google Scholar, EBSCO, J-Store, and Emerald databases with combinations of the search

terms: networks, governance, project, interorganizational. A screening of the resulting 233 articles showed that journals from public administration, management, and business dominated the field. We also identified the inclusion and exclusion criteria in respect of the research question, as follows.

Phase 3: Quality assessment. The search was subsequently limited to publications listed in the *Financial Times* FT50 list and the *Chartered ABS Journal Guide's* AJG list. This covered the public and nonpublic disciplines, the network, management, business, and project management literature. This resulted in 108 publications. These were further reduced through exclusion criteria, which centered on the questionable relevance of articles for the subquestion:

- How is theory developed and organized in the field of interorganizational NG for joint temporary organizations?

This resulted in 66 publications ranging from conceptually exploring the nature of networks (Jones et al., 1997) to in-depth case studies on network collaborations (Müller et al., 2013), spanning various types of projects, firms, and industries.

Phase 4: Data extraction. The articles were tabulated along with the nature of the article (empirical or conceptual), analysis method, theoretical perspective, findings or results, definitions or propositions, and quality-related comments.

To identify the main categories of this literature, our strategy was first to obtain a broad understanding of these articles. We listed the keywords of all of the selected articles and summarized additional keywords by reviewing abstracts, introductions, and findings. By grouping the keywords, we were able to identify first-order concepts. Then we continued by grouping these keywords into categories. For example, the keywords of the article by Provan and Kenis (2008) are *three modes of network governance and network effectiveness*. The first keyword, *modes of network governance*, is grouped with *public-private partnership (PPP)* from the article by Velotti et al. (2012), which becomes the subcategory *network typologies*. Then, the subcategories of *network typologies* and *governance mechanisms* are further coded into the *design of network governance*. We categorized the articles into three main categories, which are *design of NG*, *network performance*, and *theory in NG*. Each category was divided into subcategories identified through the article content (Figure 1).

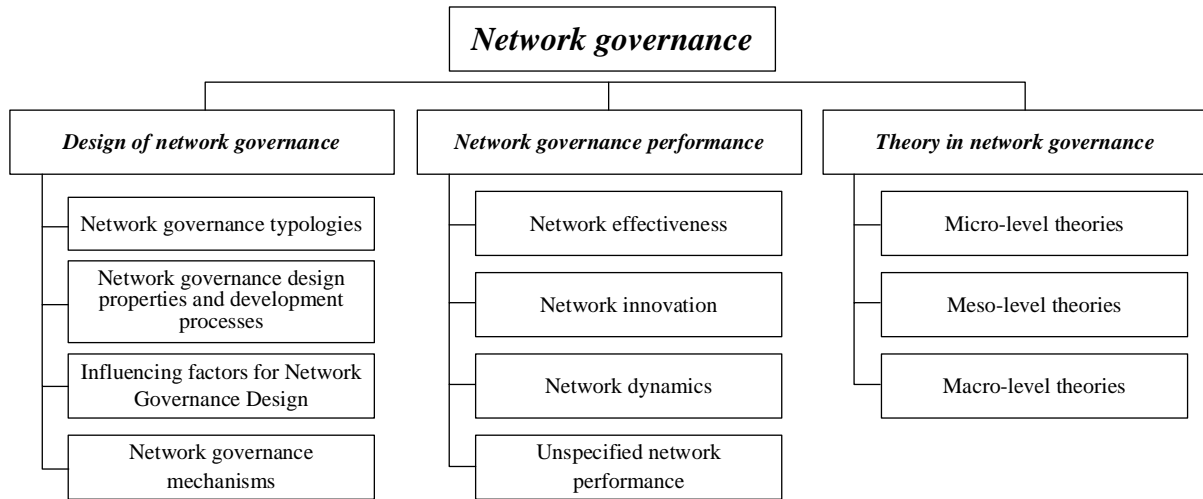


Figure 1. Main categories and their subcategories.

The *design of NG* category focuses on the development, implementation, and execution of NG. The category on *network performance* focuses on different aspects of performance in relation to NG. The *theory* category focuses on the underlying philosophical and theoretical perspectives. The first two categories are mutually exclusive and address the practicalities and consequences of NG. The latter category represents a recategorization of the articles from the first two categories to provide a perspective on the underlying theoretical stances.

Phase 5: Synthesis

Phase 6: Write-up and diffusion

The next section addresses the synthesis of the analysis of the articles.

Three Research Categories of Network Governance

The Design of Network Governance

The first category of NG research centers on NG design. Design is hereby understood as the planning and execution of the particular implementation of a network. This research category originated from the earlier study by Calton and Lad (1995), which unpacked NG as a microsocial contracting process. This category of research is further divided into NG typology, NG structure and development, governance mechanisms, and their influencing factors.

Network Governance Typology

One of the essential steps in investigating NG design is to identify the typology of NG. Typology is a classification in accordance with generally accepted types. Studies on NG design were done from various theoretical perspectives such as contingency theory (Schwab & Miner, 2008), social exchange theory (Das & Teng, 2002), transaction cost economics (Gimeno, 2004), social capital theory (South et al., 2018), social network theory (Pryke et al., 2018), and communication theory (Koschmann et al., 2012). Context-wise, design studies involve multiple sectors such as medicine (Moynihan, 2009), education (Blackmore, 2011), and construction (Pryke et al., 2018). The diversities of theoretical perspectives and contextual settings reveal the complex nature of NG design and generated several NG topologies (i.e., the ways in which constituent parts are interrelated or arranged) (Sydow, 2022). Scholars have identified certain types of NG to narrow down the research scope to some more specific types of NG. Generally speaking, the taxonomy of current research on NG is either context based or theory based (Table 1).

Table 1. Network Governance Typology

Sort By		Network Governance Types	Author(s)	Definition
Context	Industry	Strategic Alliances	(Gulati, 1998)	Voluntary arrangements between firms to exchange and share knowledge as well as resources with the intent of developing processes, products, or services (p. 293).
	Project	Temporary Multiorganization (TMO)	(Lizarralde et al., 2011)	Project team members (organizations) come together through selection procedures dictated by the client's procurement strategy (p. 19).
	Industry	Vertical Network Organization (VNO)	(Chassagnon & Baudry, 2012)	VNO is a governance structure that links a set of legally and vertically autonomous firms; one firm's output is the input of

				another firm, and so on.
	Industry	Cross-Sectional Partnerships (XSP)	(Koschmann et al., 2012)	XSPs are multilateral collectives that engage in mutual problem solving, information sharing, and resource allocation (p. 332).
	Project	Public-Private Partnership (PPP)	(Velotti et al., 2012)	PPP, particularly in reference to processes of coproduction and cocreation.
Theory	Social Capital	Intracorporate Networks (ICN)	(Inkpen & Tsang, 2005)	Members of an ICN network belong to the same corporation, often hierarchical (p. 152).
		Industrial Districts	(Inkpen & Tsang, 2005)	Characterized by spatial proximity, a.k.a. “local network” (p. 156).
		Comanagement	(Carlsson & Sandström, 2008)	A process by which private and public actors cooperate and share power, in order to solve problems related to natural resource management.
	Mode of Governance	Shared Participant-Governed Networks	(Provan & Kenis, 2008)	Often decentralized, involving most or all network members interacting on a relatively equal basis in the process of governance.
		Lead Organization	(Provan & Kenis, 2008)	There is a single powerful, often large, buyer/supplier/funder and several weaker and smaller supplier/ buyer/resource recipient firms.
		Network Administrative Organization (NAO)	(Provan & Kenis, 2008)	The coordination modes of network relationships, as an administrative unit to support and control joint network

				activities, shows intriguing similarities to project management offices (PMOs) with potentially overlapping tasks but also with the potential for complementarity and organizational tensions.
Governance Instrument		Supply Network	(Sebben & Renato, 2018)	The supply network of goods and services in a project network relates to the control and management over these transactions between the participating companies (p. 73).
		Contractual Network	(Sebben & Renato, 2018)	The contractual network is strongly connected to governance, expressing the control of a company over other members derived from their formal involvement in the project and from the formal power associated with contracts (p. 73).
		Information Network	(Sebben & Renato, 2018)	Points out the changes made in the original configuration to address situations and changes that occur during the development of the project (p. 73).

Context-based typologies focus on the business context involved in interorganizational networks and often emphasize particular contexts rather than ranges of contexts. This includes strategic alliances (Gulati, 1998), temporary multiorganizations (TMO) (Lizarralde et al., 2011), cross-sectional partnerships (XSP) (Koschmann et al., 2012), vertical network

organizations (VNO) (Chassagnon & Baudry, 2012) and public–private partnerships (PPP) (Velotti et al., 2012). These different types of NG contexts share some overlaps. For example, XSP can also be a form of PPP network, since private and public sectors in PPP projects belong to different sections.

Theory-based typologies build on existing theoretical frameworks. Three theoretical perspectives are prevalent, namely, the social capital distribution in networks (Inkpen & Tsang, 2005), the mode of NG (Provan & Kenis, 2008), and the governance instruments (Sebben & Renato, 2018). As for social capital theory, the NG can be categorized by the three forms of social capital in the networks, including the structural (network ties, network configurations, and network stability), cognitive (shared goals, shared culture), and relational (trust) perspectives of social capital theory for networks. The three types, namely, intracorporate networks, strategic alliances, and industrial districts are identified (Inkpen & Tsang, 2005) based on social capital theory. The second theoretical typology builds on the mode of governance, including shared participant governed networks, lead organization, and network administrative organization. The third theory-based typology of NG is governance instruments, which categorizes networks by the forms of governance mechanisms.

Figure 2 shows a typology of the majority of network types identified from the reviewed literature. It is adapted from Inkpen and Tsang (2005). The vertical-horizontal dimension represents the extent to which network participants are involved along the network’s value chain. The structured-unstructured dimension represents the extent to which NG is structured. Network participants’ roles and relationships are clearly defined in a structural network, and they are well organized to achieve the predefined goals. The reverse is the case for unstructured networks. Note that the location and shape of each network type in the figure are approximations.

As indicated in Figure 2, different types of networks—horizontally from intracorporate network to industrial district and vertically from vertical network organization to R&D consortium—spread evenly over the quadrant. However, those network typologies involving temporary organizing, for example, temporary multiorganization and public–private partnership, are mainly positioned in the upper left corner, which indicates their high vertical and structured nature.

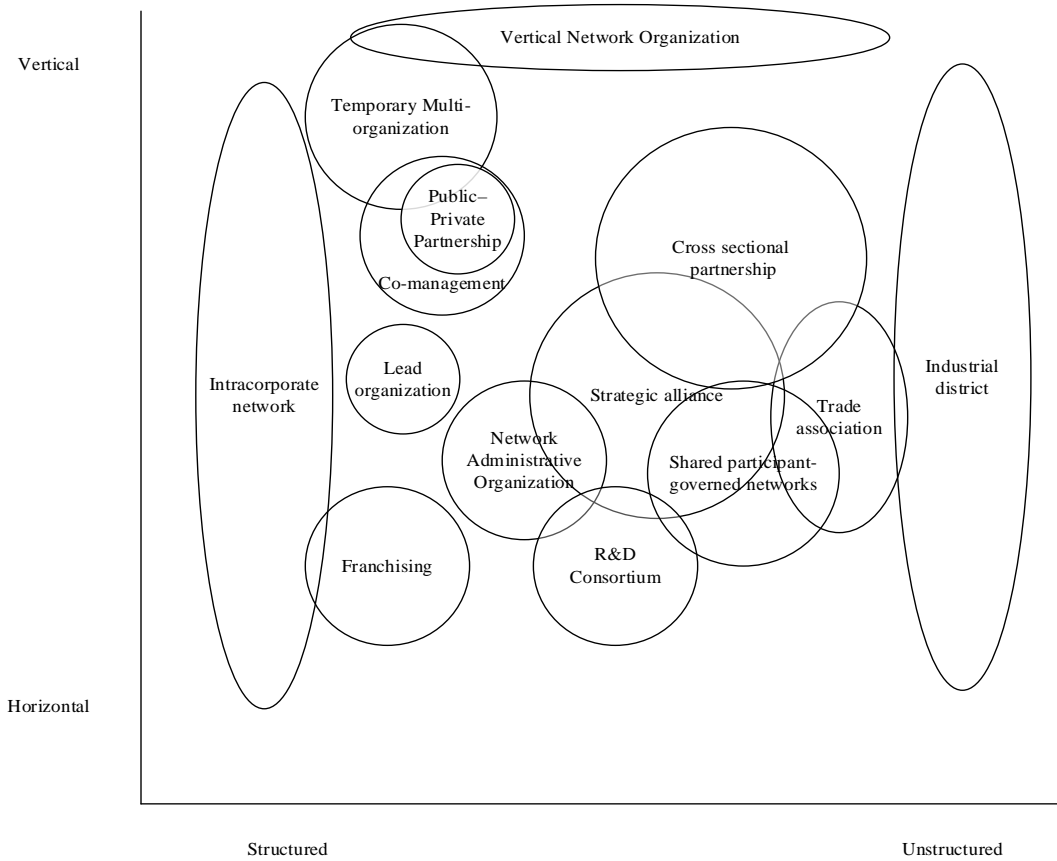


Figure 2. A typology of network governance adapted from Inkpen and Tsang (2005).

The characteristics of governance nodes and governance links per NG type are shown in Table 2. Governance nodes are a set of objects that participate in NG, whereas governance links are the ties that define the governance relationships between participants. For each governance type, the related governance nodes are shown, which are the main governance agencies of the network. The nodes conduct governance strategies and rule the network. Some networks are ruled and named after their essential governance nodes, for example, network administrative organization (NAO), whereas others are ruled by a lead organization, contractual partner (public or private), or a project management office. The governance links are the particular ties that link the participants of a specific type of network. The particular settings described in Table 2 determine the specific topology of the network.

Table 2. Network Nodes and Links for Different Network Governance Types

Network Governance Types	Governance Nodes	Governance Links
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Strategic Alliances	Nonspecific	Nonspecific
Intracorporate Networks	Intrafirm	Centralized
Industrial Districts	Nonspecific	Geographic
Comanagement	Public and Private	Hybrid
Shared Participant-Governed Networks	Majority of Firms	Distributed
Lead Organization	Lead Firm	Centralized
Network Administrative Organization (NAO)	NAO	Partially Centralized
Temporary Multiorganization (TMO)	PMO	Project Based
Vertical Network Organization (VNO)	Nonspecific	Process Based
Cross-Sectional Partnerships (XSP)	Nonspecific	Nonspecific
Public–Private Partnership (PPP)	Public and Private	Project Based/Hybrid
Supply	Nonspecific	Process Based
Contractual	Nonspecific	Contractual
Information	Nonspecific	Information

Network Governance Design Properties and Its Development Process

The second subcategory of NG design deals with how networks are formed and their specific design characteristics. This subcategory shares some overlaps with NG typologies, but it centers on the structural feature of NG and its development process. By understanding the design of NG as a process, the NG structure and its development become dynamic (Berthod et al., 2017). Literature on this subcategory addresses issues of NG structures (Chassagnon & Baudry, 2012), including the number of network participants (Provan & Kenis, 2008), network heterogeneity (Carlsson & Sandström, 2008), and network hubs (Clement et al., 2017).

Studies on network structure are often devoted to mapping and analyzing the organizations in a given network by their network properties (Table 3). The early descriptions of NG structure are mainly conceptual, such as a clique, which is defined as “a group of mutually connected actors within a larger network” (Provan & Sebastian, 1998, p. 454) The later introduced operational perspective of NG provides for measurability and mathematical feasibility in

investigating networks. This perspective frequently uses social network theory (Kilduff & Brass, 2010), which evolved from graph theory (Freeman, 1978). Social network analysis is the typical tool for investigating network parameters with organizational concepts, such as centralized or distributed, loosely coupled or tightly coupled. According to social network theory, actors, and ties among social actors are the basis and essential parameters of network structures, where key indicators including centrality (i.e., the most important or central person in this network) and structural holes are derived (Obstfeld, 2005). Literature on network structural properties also addressed network heterogeneity and network centrality. Network heterogeneity involves the diversity of actors in the given network. Network centrality describes how these actors are centrally and densely connected. Both network heterogeneity and centralized integration facilitate the performance of networks (Carlsson & Sandström, 2008). Later findings broaden the scope of network structures to three tiers, namely organizational, intracluster, and intercluster (Müller et al., 2013b).

Table 3. Network Structure Properties

Theoretical Perspectives	Structural Properties	Authors	Definition
Social Network Theory	Density	(Scott, 2000)	Dividing the actual number of connections present within a network with the maximum number of connections possible.
	Centralization	(Scott, 2000)	The extent interactions in networks are centralized.
	Heterogeneity	(Scott, 2000)	Diversity of actors.
	Path Length	(Pryke et al., 2018)	Path length indicates the distance between two actors in a network, calculated by the minimum number of ties, which must be crossed to get from one actor to another.
	Clusters	(Pryke et al., 2018)	Community structure identifies network actors that are joined together in densely connected clusters with looser connections to other parts of the network.
Structural Hole Theory	Hubs	(Clement et al., 2017)	Actors who span more cross-community triads than average obtain more opportunities

			to build such triads in the future, generating a positive feedback loop.
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Hub firms also play a crucial role in coordinating dissimilar complementary activities and enhancing the incentives of other network members. Hubs are brokers who span multiple communities of collaborators (Clement et al., 2017), adapted from structural hole theory (Burt, 1992). Their benefit lies in accessing diverse knowledge and perspectives, many of which create positive externalities by providing novel insights for the network.

Research on NG divides the dynamic development process of networks into four distinct stages: formation, stability, routinization, and extension (Sydow, 2004; Mandell & Keast, 2008; Kenis & Provan, 2010). This reveals the evolving and dynamic nature of networks. The development process can also be described as the formation of microsocial contracting processes (Calton & Lad, 1995) among network participants. For example, the transient project organization, in contrast to the formal hierarchical and contractual structures, is formed via a bottom-up approach, which emerges from the iterative communication among project participants (Pryke et al., 2018). The evolving perspective of networks shows that networks may encounter dramatic changes along their development process. This is supported by South et al.'s (2018) research on PPP projects, where stakeholder networks and institutional logics may change over the four phases mentioned here.

Influencing Factors for Network Governance Design

The third subcategory of NG design is the investigation of influencing factors for NG design. The influencing factors for NG design are multiple and complex, both beneficial and detrimental to the network (Clement et al., 2017). Many scholars have explored these influencing factors from different perspectives, among which theoretical perspectives (structural, cognitive, relational, and economic) and levels of analysis (macro-/inter-organizational, and micro-/intraorganizational) were selected to summarize the previous essential findings (Table 4) (Marchington & Vincent, 2004). As indicated in Table 4, the influencing factors for NG design are explored in a diversified and balanced way across different perspectives and levels of analysis.

Earlier studies focused on the relational factors and cognitive factors at the interorganizational level (Das & Teng, 2002), in which generalized reciprocity, social sanctions, and cooperative macroculture were identified. Then scholars shifted their focus to the dyadic relationships within interorganizational levels, which is the cospecialization within networks (Gimeno, 2004). Cospecialization determines the predominance of internetwork or intranetwork competition in a given context. As the network structure evolves, the structural properties of NG design are examined, such as heterogeneity (Carlsson & Sandström, 2008). Three influencing factors were identified qualitatively: legitimacy, power imbalance, and integration (Hermansson, 2016).

Table 4. The Influencing Factors for Network Governance Design

	Macro-/Interorganizational	Micro-/Intraorganizational
Structural	<p>Internal structure of project client (Miterev et al., 2017)</p> <p>Network ties/legal ties (existing contract) (Provan & Kenis, 2008)</p> <p>Number of network participants (Provan & Kenis, 2008)</p> <p>Heterogeneity (Carlsson & Sandström, 2008)</p> <p>Integration (Hermansson, 2016)</p>	<p>Project similarity (Schwab & Miner, 2008)</p> <p>Organizational control (Schwab & Miner, 2008)</p> <p>Hub firm (Clement et al., 2017)</p> <p>Project working (Miterev et al., 2017)</p>
Cognitive	<p>Macro/shared culture (Das & Teng, 2002)</p> <p>Shared/network goal consensus (Provan & Kenis, 2008)</p> <p>Social sanction (Das & Teng, 2002)</p> <p>Institutional environment (Yoon & Hyun, 2010)</p> <p>Legitimacy (Hermansson, 2016)</p>	<p>Organizational identity (DeFillippi & Sydow, 2016)</p> <p>Project orientation (Miterev et al., 2017)</p> <p>Project culture (Miterev et al., 2017)</p>

Relational	Generalized reciprocity (Das & Teng, 2002) Cospecialization (Gimeno, 2004) Trust (Provan & Kenis, 2008) Prior collaborations (Schwab & Miner, 2008) Informal relationships between project participants (Schwab & Miner, 2008) Power imbalance (Hermansson, 2016) Fit (Miterev et al., 2017) Churn (Miterev et al., 2017)
Economic	Economic incentives (reduce costs, project effectiveness) (Anna & Virpi, 2018) Project performance

As for networks organized by projects, the internal structure of project clients and the informal relationships between project participants were considered as important influencing factors for the design of temporary multiorganizations (Lizarralde et al., 2011). These authors conducted both micro- and macrolevels of analysis to avoid the oversimplification of common approaches. These identified factors affect the structuring of networks by determining the level of proximity between end users and the organizations responsible for the design and construction of the project. Moreover, the factors determine the complexity of relationships between project representatives, sequences of transfers of the project mandates, and levels of autonomy of the operators.

Miterev et al. (2017) explored five influencing factors for organizational design: project culture, project working, project orientation, fit, and churn. These factors reflect the differences between project-based organizations and functional organizations. The empirical investigation of project systems also reveals that prior collaboration, project similarity, and organizational control are influencing factors for NG in project systems (Schwab & Miner, 2008). Most recently, Braun and Sydow (2019) delineated the search, evaluate, and select capabilities that organizations need for selecting partners in interorganizational projects.

Network Governance Mechanisms

The fourth subcategory of NG design is about NG mechanisms. NG mechanisms encompass a wide range of intra- or interorganizational devices, roughly categorized into formal and

informal mechanisms. Some scholars suggest that NG mechanisms fall into the market-hierarchy continuum, defined as the extent to which interorganizational relationships are formalized into contractual agreements (Grandori & Soda, 1995). The formal mechanisms include cross-holdings of equities or property rights that formalize into a contract (Lin et al., 2012). Often investigated qualitatively, NG can be a part of formal institutions (Wang et al., 2018). Institutional theory offers a theoretical foundation by addressing the “processes by which social structures, including both normative and behavioral systems, are established, become stable and undergo changes over time” (Müller et al., 2016, p. 6). Institutional theory posits that institutions and organizations interact in a structuration process leading to shared norms, which forms the institutional level of network, rules, schemas, and routines, and are serving the function of monitoring and enforcing the implicit contract in a given network (Hill & Jones, 1992).

As for informal mechanisms, early studies on NG mechanisms put forward the concept of alliance constellations as a unique type of interfirm partnership based on social exchange perspectives (Das & Teng, 2002). The authors have identified three informal mechanisms for NG, namely generalized reciprocity, social sanctions, and macroculture. Embeddedness is one of the informal governance mechanisms. It posits that economic action and outcomes are affected by actors’ dyadic relations (relational embeddedness) and by the structure of the overall network of relations (structural embeddedness). This embeddedness enables social exchange mechanisms (Granovetter, 1992), and the interactive influence between informal and formal mechanisms on network performance (Lin et al., 2012). Previous studies on mechanisms posit that shared authority, member contestant, and trust may supplement the formal governance mechanism for improved crisis management (Moynihan, 2009). Some suggest that social mechanism can enhance, substitute, or harm contractual mechanisms, but the extent to which this happens depends on institutional environments (Yoon & Hyun, 2010).

Overall, this category of research depicts NG design mainly as a process, which generates structures of NG and is as such subject to social and economic capital factors at intra- and inter-organizational levels. That is, successful NG design is more likely when NG structures and mechanisms fit with both internal and external influencing factors; specifically, the design choices and processes of NG designs along with institutional environments and contextual settings from a contingency perspective.

Research gaps and imbalances stemming from the preceding review involve a multiplicity of NG design properties, interactions of their influencing factors, the side effect of NG designs, diversity of methodological approaches, and nonobjectivity aspects of NG designs. First is a frequent mix of structural aspects of NG designs with formal governance mechanisms. This blurs the relationship between the structure and formal mechanisms of NG design. Second, the investigation of NG mechanisms, especially the interactive influences between influencing factors on NG design remains largely unexplored. Third, the side effect of NG is also critical to the network performance. NG does not improve the democracy in public networks for those potentially affected by decisions, because some participants are more concerned with fulfilling entrepreneurial and epistemic goals than democratic ones (Hendriks, 2008). Therefore, institutional design alone is far from sufficient for democracy in NG; among others, the choice of public manager is also critical (Jeffares & Skelcher, 2011). Fourth, despite the social network analysis approaches, the studies on NG design remain largely conceptual and qualitative. Quantitative analysis and systematic dynamics on feedback loops of NG design-network performance may better facilitate and verify the dynamic process of NG design. The exploration of network design is often presented without comparing different contexts, where the polar of relationship switches between different contexts. Fifth, research in NG design emphasizes process and objectivistic approaches, but frequently omits topics such as power, politics, or demands from large stakeholder groups—especially from a nonobjectivist perspective.

Network Governance and Its Performance

This category explores the performance of NG resulting from effective interaction among firms within the network (Lorenzoni & Ornati, 1988). The objectives of these studies are to explore the measurement of network performance and to investigate how performance is impacted by governance mechanisms and structures. This category's literature falls into four subcategories: network effectiveness, innovation (how networks are governed to promote originality and inspire creativity), dynamics (how networks are governed to adapt to contextual changes), and a few other studies that address unspecified performance measures.

Network Effectiveness

Network effectiveness is defined as “the attainment of positive network level outcomes that could not normally be achieved by individual organizational participants acting independently” (Provan & Kenis, 2008, p. 230). It mainly focuses on the general performance and effectiveness of the network. Related studies are often empirical and exploratory in nature. They emphasize the importance of running networks effectively and explore the mechanisms that lead to this. That subcategory builds on a static perspective, which takes the effectiveness of NG as the essential goal.

Early studies focused on the impact of network structure on network effectiveness. For example, Provan and Sebastian (1998) compared the clique structure and network effectiveness by measuring client outcomes and service integration of mental health systems in three U.S. cities. They have identified that network effectiveness is positively related to integration among small cliques of agencies, with overlapping links of reciprocated referrals and case coordination. This study acknowledged the importance of NG on its performance and ignited different perspectives on network performance by suggesting researchers consider the role of strongly connected and overlapping cliques of organizations, rather than the entire network integration.

Subsequent studies shifted the focus more specifically on exploring network synergies through NG measures. Several quantitative studies investigated the relationship between NG and its performance. Wu and Choi (2004) used multiple regression analysis to test hypotheses on the relationships among transaction cost, social capital, and network synergy. The authors empirically generalized that repeated transactions with business partners, associations with government offices and financial institutions promote firms’ synergy creation, which they defined as collective efficiency and competitiveness after the exchange and integration of resources among partners.

Later studies identified a set of drivers and governance mechanisms for improved network performance. Organizational activities and asset-specific investments were identified as the two most critical drivers of the network by conducting a multiple-case study in the Dutch chemical industry (Verwaal & Hesselms 2004). When both drivers are high, then hierarchical governance is preferred, while when both are low, then market governance appears to be favorable. The relationships between governance mechanisms and network performance were further investigated using transaction-cost perspectives. Based on a meta-

analysis, Geyskens et al. (2006) discovered in their study that hierarchical and relational governance, which are compatible with transaction costs dimensions, could lead to improved network performance. Moreover, relational governance, which they assert is more suitable in the face of high volume or technological uncertainty, has a substantively larger impact on performance than hierarchical governance.

Subsequent studies in this subcategory explored how network management and governance strategies impact network performance. Jho (2010) empirically examined a successful telecom case in Korea and its NG strategies. Success is hereby explained through the companies' focus on the use of partnerships and network transactions with global firms, as well as the local private sector. The network management's impact on network performance was empirically validated (Klijn et al., 2010). A survey study with 337 responses from environmental projects examined the relationship between network management and perceived NG outcomes. Results showed that network management does matter for NG outcomes, which further demonstrates that connecting is the most promising strategy among the four strategies (exploring, connecting, arranging, and process design), while exploring shows no significance.

Network Innovation

The second subcategory focuses on innovation aspects of network performance, which explores how creativity and innovation can be achieved through networking. This subcategory explores the collective and innovative results of NG.

Innovation requires project network competences (Steen et al., 2021). A systematic review by Pittaway et al. (2004) linked the studies on networking behaviors of firms toward innovation, and found that networking behaviors benefit organizations by enhancing their risk sharing, access to new markets and technologies, pooling of complementary skills, safeguarding of property rights, and facilitating knowledge transfer from external resources. They also found that firms that do not cooperate or do not formally or informally exchange knowledge do limit their knowledge base. This reduces their ability to form long-term exchange relationships.

The later empirical studies by Thorgren et al. (2009) quantitatively validated the relationship between network design and network innovative performance. The results from 53 networks in Sweden indicated a positive influence of network size and firm incentives on innovative

performance. They indicated that the administrative function of network structure facilitates exchanges by matching members both within and outside the network.

Network Dynamics

The third subcategory of network performance focuses on the dynamic changes of network modes, including network board characteristics and network age, balancing between networking goals and governance strains, and facing challenges and maintaining the reliability of the network.

The balancing between networking goals and governance restraints were conceptually theorized by Ansell et al. (2012). This balancing is a frequent challenge encountered by network forms of organizations in comparatively successful networks. By building a synthetic view of NG, the authors explored that despite the case company's successes, NG also bears the difficult challenges of balancing performance objectives with the goals of maintaining and developing the network.

The NG structure (e.g., board characteristics) and its impact on the change in network performance were analyzed by Wincent et al. (2013), by collecting and analyzing the longitudinal data on 53 government-supported networks. By integrating agency theory perspective and embeddedness mechanisms, their results reveal that network board size and board compensation have a substantive positive influence on network performance in younger networks compared to more mature networks.

Two network dynamics processes, namely layering (informal process with actors interacting toward hybridized governance models) and switching (networks temporarily and abruptly initiate a centralized command structure) were identified by Berthod et al. (2017). Through a mixed method of network analysis and in-depth case study, they reveal that the switching processes collectively ensure the reliability of the network through changing from supportive to assertive mode with a lead organization, which involves anticipation and containment of critical incidents.

Unspecified Network Performance

Unspecified network performance refers to diversified ways of addressing network performance, typically including knowledge and value creation perspectives. Some scholars also tackled the NG issue from a knowledge management perspective (Easterby-Smith et al., 2008), in order to make suggestions for regional collaboration and combine cooperation and

competition to gain a competitive advantage. For example, Semlinger (2008) conceptually proposed a model of cooperation and competition in NG, which replaces the hierarchical mode of control and market mode of collaboration due to specialization.

Recent studies also addressed value creation through interorganizational collaborations (Weber et al., 2017) and project networks. Laursen (2018) identified four value creation processes: developing infrastructure, creating knowledge, changing minds, and managing for value capture. This broadens the perspective of value creation beyond economic exchange to other types of relationships and enriches the value creation model by introducing capturing of value.

Summarizing this category of research, network performance is influenced by NG structure and mechanisms. The particular combinations of NG structure and mechanisms impact performance as indicated by contingency theory.

Cliques, as unique architecture elements of networks, substantively improve the effectiveness of network governance. Moreover, network board and relational governance as forms of network structure appear to be positively correlated with network performance. Administrative functions, as part of network structure, promote innovativeness within networks. Networking as a general governance process, includes collaboration, layering, and switching, and is positively correlated with the innovativeness and dynamics of networks. With the aim of improving network performance, market, hierarchical, and relational governance are discrete and mutually exclusive governance modes rather than complements.

Indicated by this category of research, the network performance mainly includes network effectiveness, innovation, and dynamics as their subcategories, and the knowledge and value perspective as unspecified but emerging research subcategories. The three subcategories of research are developed sequentially at overlapping periods. However, their development is far from balanced. Studies on the effectiveness of NG dominate the publications. However, the research focus is gradually shifting toward more specific perspectives of network performance such as innovation and dynamics of networks. These categories address more diversified perspectives such as value or knowledge. Hence, scholars acknowledge the importance of multiple perspectives on network outcomes. Moreover, this category of research mainly focused on permanent context and has not incorporated temporary organizing particularities such as multiplicity of project stakeholders, institutional

complexities, tensions stemming from temporality and permanency, or balancing project and network performance.

Theory in Network Governance

This category addresses the different theoretical perspectives of the various studies. The theories fall into three major perspectives: economic, organizational, and social, which apply at different levels. Hence, we distinguish categories of micro- (dyadic), meso- (multiple), and macro- (unlimited) level theories. These are summarized in Table 5.

Table 5. The Theoretical Perspectives for NG Design

	Economic	Organizational	Social
Microlevel (Dyadic)	Transaction Costs Economics (Williamson, 1985)	Agency Theory (Jensen & Meckling, 1976) Stewardship Theory (Davis et al., 1997)	Social Exchange Theory (Das & Teng, 2002)
Meso Level (Multiple)		Contingency Theory (Schwab & Miner, 2008) Stakeholder Theory (South et al., 2018)	Network Embeddedness (Gulati & Westphal, 1999) Social Capital Theory (Inkpen & Tsang, 2005)
Macrolevel (Unlimited)			Social Network Theory (Granovetter, 1973, 1982)

Microlevel Theories

The microlevel is dominated by economic perspectives using the most popular transaction costs economics (TCE) set of theories (Williamson, 1985). Examples include Geyskens et al.'s (2006) quantitative study on the relative importance of TCE approaches, which found

that relational governance is more impactful on performance than hierarchical governance. This is followed by organizational perspectives applying, for example, agency theory (Jensen & Meckling, 1976) and stewardship theory (Davis et al., 1997). Examples here investigate the balance between organizational and network interests through adopting monitoring and control modes to network maturity (Wincent et al., 2013), or investigate ways to overcome shortcomings of existing governance structures through stewardship approaches (Sivalingam, 2010; Thorgren et al., 2010). Societal perspectives are exemplified by social exchange theory to describe generalized exchanges in alliances (Das & Teng, 2002).

Mesolevel Theories

The mesolevel is dominated by studies using an organizational perspective and contingency theory. Here Schwab and Miner's (2008) mixed methods study showed that higher project performance leads to future collaborations with the same partners. Müller et al. (2013a) investigated the governance of project PMO networks and identified how role assumptions of PMOs govern the interaction between network members, and influence the effectiveness and ambidexterity in knowledge management in these networks. This is complemented by stakeholder theory studies such as those by South et al. (2018), who investigated the interaction within a stakeholder network over the life cycle of a large-scale infrastructure project and identified a migration from informal to formal institutional logics over time. Social perspectives at the mesolevel were applied, for example, by Gulati and Westphal (1999) who identified the impact of board interlocks between firms increasing or decreasing the likelihood of strategic alliances. This is complemented by social capital theory-based articles such as Inkpen and Tsang's (2005) examination of the impact of social capital dimensions on the transfer of knowledge between network members.

Macrolevel Theories

Finally, the macrolevel is mainly represented by social network theory, like Granovetter's (1973, 1982) work on the importance of weak ties of network members for the formation of networks over time.

Many of the studies refer to institutional logics, such as Park's (1996) study on interorganizational control modes in different network structures. However, institutional theory, such as that from Scott (2014), seems to be underrepresented. Institutional theory, with its distinction between regulative, normative, and cultural-cognitive elements, can perceive interorganizational settings as a temporary multiinstitution, where formal and

informal institutions rule the collective behaviors of organizations. This may be adopted to investigate how NG mitigates network hazards caused by institutional complexities.

Other suggestions for future theoretical perspectives are value cocreation theory. This theory implies that suppliers and customers are no longer on different sides, but interact to jointly develop value. This new perspective on the way value is created, distributed, paid for, and exploited implies a very different approach to networking, which goes beyond traditional perspectives (Galvagno & Dalli, 2014). Studies on the ways NG should be designed and implemented using a value cocreation perspective to maximize performance measures are indicated.

Overall, this category of research presents three different levels of theories on NG, including microlevel, mesolevel, and macrolevel theories. However, NG for temporary organizations is level crossing in nature, since it involves multiple partners' strategic collaboration across projects and operational coordination within the project scope and life cycle. This level-crossing nature of NG has not been addressed in extant research. Therefore, theories focusing on only one level might be shorthanded for investigating interorganizational NG for joint temporary organizations. This lack of a level-crossing theoretical perspective hinders scholars from untangling the dynamics and complexities stemming from interactions among projects, organizations, and networks.

Future Research Agenda

We proposed several research opportunities based on three main categories of research that we have identified in our literature review. Future research could focus on configurational understanding of network governance design, governing for temporary organizing particularities, level-crossing theoretical development, and measurement of network governance.

Configurational Understanding of Network Governance Design

Extant research on NG has highlighted the importance of studying via a configurational and integrated approach toward different contextual conditions, NG design properties, and mechanisms (Verweij et al., 2013). However, relatively little is known about the combined and configurational effect of these governance design properties and mechanisms. Given the

significance of NG for temporary organizations, this lack of understanding is unsatisfactory. Research efforts should focus on network typologies for different projects across industries and the combined effects of NG properties and mechanisms.

We noticed that literature has focused on network typologies (strategic alliances, temporary TMO, VNO, XSP, PPP, ICN, industrial districts, comanagement, shared participant-governed networks, lead organization, NAO). But few studies have explored and compared whether these typologies function or not in the context of temporary organizing. We envisage more research focusing on typologies to examine the network structures, formations, natures of ties, nature of nodes, logics, drivers, and strengths and weaknesses, especially when considering contexts for different industries (Manning, 2017).

The pluralism of governance mechanisms requires investigation. The extant research focuses mainly on contractual and relational governance in interorganizational settings (Poppo & Zenger, 2002; Liu et al., 2009; Li et al., 2010). In project networks, governance mechanisms often involve hierarchical elements due to resource dependence and power imbalance between contractors and suppliers (Olsen et al., 2005). There is a lack of understanding of hierarchical elements in NG (Provan & Kenis, 2008) but it raises an emerging concern in the public management literature (Wang & Ran, 2021). The investigation of hybrid and multiplicity of governance mechanisms allows for a comprehensive understanding of governing interorganizational projects.

The pluralism of governance structures implies their complex and combined impact on network performance. For example, the question of how multilevel governance impacts different perspectives of network performance is, to the best of our knowledge, not specifically studied. This research gap provides opportunities to understand how these fundamental governance structures influence network performance, including density, centrality, and hubs. The study on cliques is the only one addressing the impact of network architecture on network performance. Therefore, more studies should address the various types of network architectures.

In addition, the configurational and interactive effects between network structures and governance mechanisms need further research. That is, we anticipate opportunities for deepening NG studies through a contingent perspective on the compatibility between network structures and governance mechanisms. This might generate more nuanced insights into the design of governance mechanisms with different network typologies and properties. This

configurational perspective also applies to the NG design. Extant research on NG design has identified multiple influencing factors (see Table 4) but mainly used variable-centered analyses. Future research will benefit from a network-centered approach by considering multiple network properties and developing configurations for potentially more generalizable results (Fiss, 2007). Hence, we need to understand in greater detail how different contexts, typologies, and properties interact with one another to affect the temporary organization's effectiveness.

Governing for Temporary Organizing Particularities

Interorganizational projects suffer from multiple tensions, including the temporary and permanent paradox and the individual and collective identity paradox (Zerjav, 2021). The former relates to an ongoing debate on the extent to which project organizations should be decoupled from or embedded in their broader organizational context (DeFillippi & Sydow, 2016). The latter describes the challenge faced by all project networks that a collective identity is pursued for project participants while respecting their individual identities (DeFillippi & Sydow, 2016). These tensions and paradoxes differentiate NG for projects from other networks in general management such as traditional manufacturing settings. NG designs for projects should target temporary organizing particularities, including but not limited to institutional complexities (Qiu et al., 2019), and bridging temporality (Stjerne & Svejnova, 2016). Moreover, the extension of performance criteria is also needed to provide a larger picture for all project participants.

Institutional complexities have been a major challenge for NG for temporary organizations (Matinheikki et al., 2021; Fu et al., 2022). Extant NG research in projects mainly treated project partners as homogeneous, whereas multiple stakeholders are often from the diversified institutional background and equipped with multiple institutional logics (Greenwood et al., 2011). Some studies have called for an academic investigation of network heterogeneity (Carlsson & Sandström, 2008). Thus, there is a need to reconsider the design of NG mechanisms to resolve these institutional complexities since collective effort is required to achieve project goals.

The temporal and permanent paradox threatens NG since networks that are not simply focused on a temporary, short-term project must also focus on sustainment (Provan & Kenis, 2008). Disconnectedness and singularities threaten the stability of NG (Sydow & Braun, 2018). Hence, the governance of project stakeholders in a single network might be ineffective

if prior ties and post-project collaborations are not available or foreseeable (Yang et al., 2022). This is an important gap in our current understanding. In line with research on NG, a useful point of departure would be to consider how multiple projects are governed among certain groups of project stakeholders.

The network performance category will also benefit from an *extension of performance criteria* for better alignment with higher arching objectives that drive the current discourse in industry, public, and society. This includes the contribution of networks (and their governance) to, for example, sustainability measures or the United Nations' (UN) Sustainable Development Goals (SDGs), which by their very nature can only be accomplished through networked interorganizational projects and their governance. For that, NG researchers need to broaden their view and see interorganizational networks and joint projects as societal phenomena rather than technological links between actors. This bears the chance of contributing to larger goals than those currently targeted.

To maintain economics, it will also be interesting to investigate when and how interorganizational projects create and stop creating values. Value cocreation is generally understood as, “the joint, collaborative, concurrent, peer-like process of producing a new value, both materially and symbolically” (Galvagno & Dalli, 2014, p. 644). However, when value is cocreated in networks in projects, the process and dynamics might differ. That is, the collective efforts made in one project, might generate long-lasting value across multiple project networks and be perceived by multiple stakeholders. Hence, research on relationships between NG and value cocreation (or even codestruction) requires further investigation and nuanced understanding,

Level-Crossing Theoretical Development

As elaborated in the previous paragraphs, NG involves multiple levels of governance, including governance of project stakeholders, governance of multiple project networks (Sydow & Braun, 2018), and even metagovernance. Extant theories addressing the micro-, macro-, or mesolevel of analysis do not provide insights into ways NG at the microlevel (interorganizational) and governance of networks at the macrolevel (internetwork) interact with one another. Here the former refers to the governance of a single network at a time (as described by Provan and Kenis, 2008), and the latter to the governance of several networks over time or simultaneously such as the many different networks an investor is participating in for their many ongoing and developing projects. Therefore, understanding cross-level

governance and its corresponding theories is likely to be particularly useful. Such research would benefit from taking into account how hierarchical and network elements are balanced during NG.

Measurement of Network Performance

The concepts of network performance from different perspectives are not fully clarified to reach a unified understanding or measurement. The measurement of effectiveness, innovation, or dynamic perspective of network performance was not empirically developed. Without a well-defined and empirically measured construct, network performance might mean different things to different people. To what extent and from which perspective the network performance is defined or measured can build the foundation of this category of research.

Discussion and Conclusion

In this article, our goal is to take stock of how the theory of interorganizational NG for joint temporary organizations is structured, to synthesize the related dimensions of each structural element (RQ1), and further suggest a future research agenda (RQ2). As for RQ1, this systematic literature review in the realm of NG for joint interorganizational projects has shown that the field is structured by categories for (1) approaches to NG design, (2) measures of and impact on performance, and (3) different theoretical perspectives. Each of these main categories contains subcategories as outlined in Figure 1 and discussed in the synthesis section. Research thus far has produced a great wealth of knowledge on NG for temporary organizations. Reviewing these categories reveals three key findings. First, the research on NG design and mechanisms is fragmented. There is a lack of configurational and integrated understanding of different NG design properties and mechanisms. Second, NG has been conceptualized and investigated similarly across temporary and permanent contexts. The NG design properties and mechanisms have not been developed to target the particularities of temporary organizations. Some key characteristics for interorganizational projects remain to be addressed through the design of NG (Sydow & Braun, 2018). Third, the theories underpinning the NG studies are not developed in balance. The current understanding of governance of interorganizational projects is mainly derived from the dyadic perspective at the microlevel, including TCE and agency theory, and from the nature of ties at the

macrolevel (Roehrich & Lewis, 2014). Hence, the microfoundation of how cross-level NG functions, including governance of several networks simultaneously, has not been explored thus far (Šimkonis et al., 2021). Moreover, the ground rules on which the governance levels are built, generally known as metagovernance or “governance of governance” (Torfing, 2016, p. 525) have mainly been addressed in political science, but to a much lesser degree in management studies. As for RQ2, we suggest addressing the three main categories and propose new directions on a configurational understanding of network governance, governing for temporary organizing particularities, and level-crossing theoretical development.

Our literature review makes two theoretical contributions to network governance and temporary organization literature. First, our literature review on the theory of interorganizational NG for joint temporary organizations helps to clarify its structural dimensions. By identifying the key categories of NG research, our results allow for management scholars to make sense of this broad and diversified literature landscape. Our review discovers this emerging trend of three categories of NG research, including design, performance, and theory of NG, and further specifically reveals some critical unknowns on NG for temporary organizing. Second, based on this synthesis of categories of research, our research develops several potential research agendas and enlightens future investigations that bridge network governance and temporary organization literature. By identifying paradoxes and complexities of addressing NG for temporary organizing particularities, some promising and nuanced research opportunities are proposed.

This systematic study has some limitations, such as its focus on academic literature only, the limitations in selecting ‘FT50’ and ‘AJG’ journals only, as well as the obvious risk of inadvertently omitting key publications. To that end, we suggest complementing this academic view with a similar study addressing the publications by policy-making institutions, or practitioners at large. Combining these studies’ insights will provide a comprehensive and realistic understanding of NG.

We hope that this study has contributed to a better understanding of the nature and structure of interorganizational NG for joint projects and that the readers will find value in the suggested ways to further develop this field through new theory development.

Acknowledgments

This research has been sponsored by the National Natural Science Foundation of China, Project Management Institute (PMI) Sponsored Research Grant, PMI Doctoral Thesis Grant, China Postdoctoral Science Foundation, and the Fundamental Research Funds for the Central Universities.

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