

## HOW ORGANIZATIONS EXPLOIT INTER-ORGANIZATIONAL NETWORK RELATIONS AS A RESPONSE TO VUCA ENVIRONMENT

Marcin FLIEGER

General Tadeusz Kościuszko Military University of Land Forces; marcin.flieger@awl.edu.pl,  
ORCID: 0000-0002-6810-7141

**Purpose:** The main scientific purpose of the paper is to identify how organizations modify the intensity of network relations' features as a response to VUCA environment.

**Design/methodology/approach:** Conceptual development and positioning of the research aim at providing a generalizable contribution to management science, at the same time being accessible to practitioners. The research was carried out using the interpretive method of a multiple case study, following its methodological rigor. It was divided into two stages: within-case analysis and cross-case analysis. According to the replication logic, case studies constitute series of independent research which provide data corresponding with set research questions.

**Findings:** The research shows that network as a whole reacts to changing conditions; organizations operating in VUCA environment in most cases change noticeably the intensity of relations' features. Moreover, there are noticeable differences in the way organizations modify features' intensity depending on particular VUCA element.

**Research limitations/implications:** Natural character of case studies requires cautiousness regarding the scale of generalizing results. It provides information which lets us understand some phenomenon which has not yet been fully identified and explored. Therefore, the limitations ought to be treated as a starting point for further scientific explorations, e.g. expanding the results by implementing Necessary Condition Analysis and/or concentrating on a *structural* modifications of network and then linking it to the changes in a relational dimension.

**Practical implications:** The results allow identifying a pattern which shows how organizations modify network features' intensity – the template serves as a practical tool for managers in the process of planning and developing relations with other network participants when an organization faces VUCA environment.

**Originality/value:** The study is designed to deepen our knowledge about the specific nature of inter-organizational networks and to understand the character of relations between network participants. The author adopts a dynamic perspective to the problem of intentional creation of relations with other network participants, in order to adjust to demanding, unfavourable VUCA surrounding. In the literature still quite little attention is put on understanding how network reacts to changing conditions, especially from a relational perspective. Therefore, the author focuses on filling this gap by deepening the analysis of the relational dynamics of network.

**Keywords:** inter-organizational network, network collaboration, network relations, VUCA environment.

**Category of the paper:** Research paper.

## 1. Introduction

Current conditions of managing organizations are rather unfavourable and demanding (He, Ma, Zhang, 2020). It refers to both microeconomic and macroeconomic conditions (e.g. rapid growth of interest rates and inflation, limiting access to financing) (D'Mello, Toscano, 2020; Xu, 2020). Moreover, organizations need to assess competences to adjust to strong global trends and phenomena such as: development of artificial intelligence (AI), processes of digitalization, robotization or implementation of green new deal. Finally, managers face so-called 'black swans', which are sudden, extremely negative events difficult to foresee and, as a consequence, in most cases impossible to prepare (lately they were e.g. global lockdowns or restrictions caused by the conflict in Ukraine). In the last view years such demanding and unfavourable operations conditions started to be characterized by four features: volatility, uncertainty, complexity and ambiguity. They constitute a so-called VUCA environment (Barbier, Robertson, 2022). Taking all these aspects into consideration, a natural question arises how to minimize negative consequences and adjust to such complex operating conditions.

The answer to this problem might be conscious and active participation in inter-organizational networks. Nowadays organizations operate in the environment characterised by multi-directional co-dependence of business partners (Peterman, Kourula, Levitt, 2020; Tatarynowicz, Sytch, Gulati, 2016). These interactions constitute network of relations (Kim, Howard, 2016; Mayne, Wileman, Leeuw, 2003). The theory of network abandoned an atomic approach to explain reality in favour of a holistic perspective of network collaboration (Bryson, Crosby, Stone, 2015; Gebo, Bond, 2019; Sakai, Kang, 2000). Network itself constitutes a collection of long-term, direct or indirect, formal and informal relations between two or more units (Camagni, 1995; Edelenbos, Klijjn, 2007; Håkansson, Snehota, 1989; Kilduff, Tsai, 2003). Exploitation of network relations in VUCA environment become a great value, as they may support securing position of an organization (Pedersen, Clausen, Jørgensen, 2022).

This leads to a general problem whether organizations experiencing factors which create VUCA environment modify network relations in order to adjust to new conditions. In the paper I focus on answering the following research questions:

1. What are and how to classify the features of network relations?
2. What is the nature of volatility, uncertainty, complexity and ambiguity (VUCA environment) from an organizational perspective?
3. What is the dynamics of change in the intensity of network relations' features, as a response to increase in volatility, uncertainty, complexity and ambiguity?

The main objective of the paper is to identify how organizations change the intensity of network relations' features as a response to VUCA environment.

Presented analysis and conclusions are intended to provide both theoretical and practical contribution. More profound understanding of the dynamics of network relations allow creating interactions between partners more consciously, and increasing efficiency of creating value by network participants. I present a concise theoretical construct which explains dimensions and dynamics of inter-organizational networks. This leads to conceptualization of a pattern showing how organizations exploit network relations in order to adjust to market conditions. It may serve as a template for practical use by managers; how to plan and develop network relations in order to maximize benefits while operating in VUCA environment.

## 2. Literature review

### 2.1. Network relations – dimensions and features

Inter-organizational network collaboration is characterized by free-will access, awareness of common objectives, partnership and trust (Goerdel, 2006; Newman et al., 2004). Such networks allow achieving objectives not attainable either by individual units or through traditional administrative hierarchies (Hu, Khosa, Kapucu, 2016; Siciliano, Wang, Medina, 2020). However, to be able to reach in-depth conclusions regarding the efficiency of inter-organizational networks and benefits achieved by collaborating partners, the analysis should concentrate on the essence of *relations* between units (Czakon, 2012). To gain set benefits, organizations ought to treat network relations in an instrumental way by conscious exploitation of different kinds of relations as the collaboration develops (Choi, Lee, 2022; Kilduff, Tsai, 2003; Zaheer, Gozubuyuk, Milanov, 2010).

Semantic and comparative analysis of the features presented in the literature constituted a base for classifying network relations' features and identifying their dimensions. I adopted the classification proposed by W. Czakon (2005; 2007), J.C. Anderson, H. Hakansson and J. Johanson (1994), and G. Easton (1992). Also, I included the typology presented by D. Ford, L. Gadde, H. Hakansson, J. Snehota (2003) and J. Dyer (1997). Finally, I operationalized three dimensions of network relations developed by organizations: exchange, involvement and reciprocation. Each of them includes a list of network relations' features; which was presented in Table 1.

**Table 1.**  
*Dimensions and features of network relations*

<b>Dimension</b>	<b>Network relations' features</b>	<b>Main characteristics</b>
Exchange	information exchange	<ul style="list-style-type: none"> <li>• repetitiveness</li> <li>• mutuality (multi-directional exchange)</li> <li>• realized between autonomic units</li> </ul>
	material exchange	
	energy exchange	
Involvement	expectation of continuing and deepening relations	<ul style="list-style-type: none"> <li>• deepening and widening relations of exchange</li> <li>• multi-level character</li> <li>• supports avoiding opportunistic behaviour</li> </ul>
	investing in co-specialized resources	
	developing informal relations	
	developing formal relations	
	embeddedness	
	building mutual trust	
	building loyalty	
	building shared values	
avoiding/de-escalation of conflicts		
Reciprocation	expectation of equal efforts	<ul style="list-style-type: none"> <li>• aiming at symmetry (balance) between cooperating units</li> </ul>
	identifying common objectives	
	common planning and making decisions	
	common solving problems	
	adapting to partners' needs	

Source: Own study, based on (Anderson, Håkansson, Johanson, 1994; Czakon, 2005; Easton, 1992).

Dimension I includes three forms of exchange which constitute an important element of market transactions and allocation of resources which takes place within an organization. This information, material and energy exchange is characterized by lack of hierarchy, organizational autonomy and repetitiveness. Moreover, it is mutual, which means that the exchange is realized in both directions between collaborating organizations.

Network relations' features classified within Involvement (Dimension II) relate to deepening and widening relations of exchange (Anderson, Håkansson, Johanson, 1994). I operationalized this dimension mainly by adapting the typology of involvement proposed by J. Dyer (1997). Consequently, the features relate to issues such as: expectation of continuing relations, investing in co-specialized resources, avoiding or de-escalating conflicts, and questions of embeddedness, building trust, loyalty and shared values. Altogether, involvement developed within inter-organizational networks has a multi-level character and it is supposed to allow avoiding opportunistic behaviour by network members.

Finally, the features included in Dimension III (Reciprocation) constitute a logical development and completion of Dimension II. Whereas features within Involvement aim at developing and deepening relations, Reciprocation focuses on expectation of symmetry (balance) between cooperating organizations. Each network member assesses their own effort put into collaboration and they expect adequate, similar effort from other units. What is important, this mutuality concerns not only symmetry in exchange, but also in coordinated planning, making decisions, solving problems and adapting to partners' needs.

## 2.2. VUCA elements

VUCA is an acronym that stands for: volatility, uncertainty, complexity and ambiguity. It was originally developed by U.S. Army and was supposed to characterize unfavourable battlefield conditions. These four elements describe a situation or conditions which are difficult to analyse or prepare for (Taskan, Junca-Silva, Caetano, 2022). With time the term spread to other fields; in an organizational context it is generally understood in a following way (Barbier, Robertson, 2022; Rath, Grosskopf, Barmeyer, 2021):

1. *Volatility* – refers to being subject to frequent, fast and significant change; very small variations may result in large changes. The challenge is unexpected or unstable and may be of unknown period of time. It often characterizes change of prices, in a volatile market they can rise or fall dramatically very fast, and the direction of a trend can reverse in an instant.
2. *Uncertainty* – takes place when events and outcomes are difficult to foresee. We do not understand well the cause and effect, and our previous experience may not apply to the current situation. For instance, in an uncertain market we do not know how the prices will change: whether they will rise or fall and by how much.
3. *Complexity* – means that many issues or factors are directly or indirectly related to one another. At the same time this multiplicity is difficult to understand: a change in one element may cause unintended changes to other things. Consequently, it may be not clear which factors are crucial in the decision-making process. In a complex market, for instance, the changes in electricity prices will affect the prices of numerous other items which are not directly related.
4. *Ambiguity* – occurs when it is not clear and difficult to understand fully what the situation is. Often it is caused by misread or misinterpreted information. In ambiguous situations, intended outcome may not be evident. For instance, ambiguity may occur when an organization decides to move into immature or emerging markets, or when it launches some product outside its core competences.

## 3. Research methodology

My research was based on the qualitative research method of a multiple case study (Yin, 2014), following its methodological rigor (Eisenhardt, 1991). This choice corresponds with the research objectives and what is currently known about analysed issues (Graebner, Martin, Roundy, 2012). Inter-organizational networks are still a relatively new phenomenon which is conditioned by many variables. Consequently, the need arises for a thorough examination which would explain the nature of networks; what mechanisms of adaptation to a changing environment they implement.

Taking the above into consideration, I adopted the interpretative paradigm. This perspective allowed me to understand fully the phenomenon in some particular context (Eisenhardt, Graebner, 2007). The situational context determined the research results in each case study, but at the same time it constituted a base for presenting characteristics of the whole class of researched objects (Yin, 2014).

The multiple case study analysis consisted of two elements: within-case analysis and cross-case analysis. According to the replication logic, I carried out a series of independent case research which provided data corresponding with set research questions. The results of each individual case study served as a base for cross-case comparisons. As a result, I was able to make theoretical generalizations regarding the reaction to VUCA environment; the dynamics of change in the intensity of network relations' features.

I used the statistical method of clustering, which served for operationalizing dimensions of network relations (all network relations' features were clustered according to three dimensions: exchange, involvement, reciprocation – Table 1).

I carried out 18 case studies. The main criteria of selecting the cases were (Flyvbjerg, 2012):

- clarity of case – this criterion refers to two conditions: 1) researched organizations are active participants of inter-organizational networks, 2) organizations operate in VUCA environment. Hence, collected data bases on real experience, which ensures its reliability;
- access to crucial data – it refers to the possibility of carrying out interviews (and as a consequence filling in relational matrix) and analysing internal documents.

Characteristics of scrutinized organizations was presented in Table 2. All of them have headquarters in Poland and they represent different types and scale of business. Within networks, they collaborate not only with business units, but also with public organizations and NGOs. Such a diversity of cases served as a base for a complex and consistent analysis of the researched phenomena.

**Table 2.**  
*Characteristics of researched cases*

Criterion	Variant	Number of cases
Type of business	production	6
	trade	4
	services	8
Size	1-9 employees	3
	10-49 employees	11
	50-99 employees	4
Type of partners	business	18
	NGO	3
	public	9

Source: Own study.

The complexity of the analysed phenomena and the variety of information characteristic for the multiple case study method led to implementing the strategy of triangulation of gathering data methods (Yin, 2014). These methods were: an expert interview and an analysis of documents. I carried out the in-depth group interviews between October 2022 and April 2023. In order to minimize subjective assessment, I implemented triangulation of informants, interviewing from 2 to 3 representatives of each organization. Depending on the case, they were: managing director, vice-managing director, manager of department (or other organizational unit), spokesperson. They filled in a relational matrix which allowed identifying the change in the intensity of network relations' features as a response to VUCA environment (which corresponds with the results presented in Table 3). The analysis of documents included: operational reports, development strategies, statistical reports. It allowed confronting the gathered data with the information provided by the interviewees.

The interviews were transcribed and analysed (Miles, Huberman, 2000). The qualitative data was:

1. reduced– all interviews were transcribed and the whole material was coded according to adopted conceptual frames (*a priori* codes),
2. displayed – the codes (network relations' features and the benefits from network collaboration) were particularized and ordered,
3. verified – I interpreted the empirical data with reference to literature concepts and theories.

In order to ensure the correctness and the trustworthiness of the research, I fulfilled three evaluation criteria which refer to the methodological rigor of qualitative research evaluation. They are: credibility, transferability and confirmability. Credibility results from presenting a real picture of the investigated phenomena; it was ensured by:

- interviewing people who have in-depth knowledge of the researched phenomena (they actively participate in developing network relations with other organizations and have an experience in operating in VUCA environment),
- conducting interviews in time and places convenient for interviewees, in this way providing conditions to speak freely,
- iterative collection of data and detailed analysis of the material.

Another criterion, transferability, is understood as a possibility of formulating some recommendations for other organizations. It was met by presenting the contextual aspect of the research and explaining in what way the research results may be useful for other units which experience VUCA environment and are involved in network collaboration.

Finally, confirmability means ensuring that the findings are strictly correlated with the collected data and that the risk of potential subjective assessment of the researcher is minimized. In order to meet this criterion, I used triangulation of methods (interviews, documents analysis), triangulation of informants (Mason, 1996) and a detailed description of methodological perspective in relation to the research results.

## 4. Results and discussion

### 4.1. Change of network relations' features as a response to VUCA environment

Within the research I diagnosed how organizations changed the intensity of network relations' features as a response to operating in VUCA environment. I analysed this change separately for each element: volatility, uncertainty, complexity and ambiguity. The results were presented in Table 3. The change in the intensity of network relations' features was marked according to the following scale:

2 – considerable increase

1 – moderate increase

0 – not changed

-1 – moderate decrease

-2 – considerable decrease

**Table 3.**

*Change in intensity of network relations' features as a response to VUCA environment*

	Network relations' features	VUCA environment			
		Volatility	Uncertainty	Complexity	Ambiguity
Exchange	information exchange	<b>1,51</b>	<b>1,48</b>	<b>1,28</b>	<b>1,39</b>
	material exchange	- 0,52	0,23	0,18	0,11
	energy exchange	<b>0,93</b>	<b>1,12</b>	0,65	<b>0,98</b>
Involvement	expectation of continuing and deepening relations	0,22	<b>0,99</b>	0,13	<b>1,12</b>
	investing in co-specialized resources	0,16	0,12	- 0,12	0,06
	developing informal relations	<b>1,09</b>	<b>1,34</b>	0,66	<b>1,12</b>
	developing formal relations	<b>1,11</b>	0,65	0,43	0,23
	embeddedness	- 0,14	0,26	- 0,08	0,17
	building mutual trust	- 0,16	0,77	0,68	<b>1,03</b>
	building loyalty	0,20	0,67	0,32	0,45
	building shared values	0,09	- 0,11	- 0,20	0,19
Reciprocity	avoiding/de-escalation of conflicts	<b>1,17</b>	0,09	0,78	0,30
	expectation of equal efforts	0,78	0,66	0,40	<b>0,89</b>
	identifying common objectives	0,45	0,12	0,12	0,62
	common planning and making decisions	0,34	0,80	<b>0,97</b>	<b>1,04</b>
	common solving problems	0,52	<b>1,12</b>	<b>0,93</b>	<b>0,95</b>
	adapting to partners' needs	- 0,10	- 0,27	0,12	0,20

Source: Own study.

#### a) Volatility

As for exploiting network relations' features for limiting volatility, the most considerable increase in the intensity was observed among features which support rather *operational* abilities. It appears that organizations concentrate on developing short-term efficiency; abilities to react fast to changes in the environment (volatile conditions). Most of all, organizations focused on intensifying exploitation of features from Exchange dimension: information and energy exchange. They were accompanied by the increase of three features from Involvement



dimension; organizations developed both formal and informal relations and concentrated on avoiding conflicts with network partners.

At the same time results suggest that exploitation of features which support development of network *in long-term* is considerably less important. Such an approach seems very pragmatic, it is a logical reaction to fast-changing conditions. What really matters is developing agile competences, building abilities to adjust to current situation.

#### **b) Uncertainty**

Unlike volatility, in case of reaction to uncertainty there are two perspectives which seem important – both short-term and long-term. In the operational one, organizations exploit mostly features from Exchange dimension (information and energy exchange) and Reciprocation (common decision-making and solving problems). However, at the same time fundamentals for long-term collaboration are strengthened, mostly through Involvement dimension. Organizations intensified features such as: expectation of continuing and deepening relations, developing informal relations, building trust and loyalty. Thus, organizations limit uncertainty also by increasing long-term involvement in network collaboration, they perceive networks as a way to support and improve their market position. By doing so, they participate in the process of developing and strengthening network as a whole.

#### **c) Complexity**

Similarly to other VUCA elements, organizations increased intensity of features from Exchange dimension, especially information exchange. Moreover, there are two features from Reciprocation dimension which stand out: common planning/making decision and solving problems. Organizations make an attempt to take advantage from partners' knowledge and consult in decision-making process. It becomes a way to limit risk connected with complexity of operational environment.

#### **d) Ambiguity**

Changes in the intensity of network relations' features are very similar to the modifications in Uncertainty element; organizations exploit network in both short-term and long-term (compare: Srivastava, 2015). Intensification is considerable mostly in Exchange and Reciprocation dimensions.

## **5. Conclusions**

Detailed analysis of the research results allowed me to identify a pattern which shows how organizations change the intensity of network relations' features as a response to VUCA environment, in order to achieve set benefits and sustain network cohesion (Cavalcanti, Giannitsarou, Johnson, 2017; Sharkey et al., 2021). It occurred that organizations indeed change/intensify relations' features in demanding VUCA surrounding:

1. Noticeable change in the intensity of most features proves that network as a whole reacts to changing conditions, which makes it a dynamic construct. Participants of network use it in order to adjust to VUCA environment. In the search for maximizing benefit, they indeed modify relations with other members.
2. Intensity of most network relations' features *increased*, some to a considerable degree – it shows that participation in network is perceived as a way of supporting management and surviving in demanding, unfavourable conditions. Organizations do it by implementing strategy of exploring and deepening interactions between network members.
3. There are noticeable differences in the way organizations modify features' intensity depending on particular VUCA element – it proves that these four elements are perceived separately and that there is a strong awareness of what sort of threats each of them brings. For instance, organizations react differently to volatile conditions than to complexity, prioritizing other dimensions and exploiting/intensifying other features. However, it ought to be noticed that there are some similarities in reaction to uncertainty and ambiguity; the reason might be that both of them refer to a strong feeling of unpredictability.
4. Despite above-mentioned differences, what is similar and stands out in reaction to each VUCA element is that in each case there are two features from Exchange dimension that appear to be most important: information and energy exchange. They constitute a fundament of exploiting network; most of all, organizations focus on developing efficient and positive communication between partners.

Moreover, there are a few features from Reciprocation dimension which appeared to be vital for organizations as a response to three VUCA elements (uncertainty, complexity and ambiguity). They are especially: common planning/making decisions and common solving problems. Thus, network relations allow limiting negative influence of three VUCA elements by consulting these two activities which constitute basic managerial areas.

On the other hand, the least exploited features (which in some VUCA elements even decreased intensity) were: material exchange, adapting to partners' needs, embeddedness and building shared values. Except the first one, they refer to rather *long-term* development of network. This finding supports the notion that organizations which experience VUCA conditions tend to focus on exploiting network more in an *operational* perspective.

Theoretical contribution of the research concerns deepening knowledge about the nature of inter-organizational networks, understanding the dynamics of relations between actors and possibilities of exploiting network in order to respond to current trends and phenomena. I presented a concise theoretical construct focusing on conceptualizing a pattern which explains how organizations behave in a volatile, uncertain, complex and ambiguous environment; how they modify the intensity of network relations' features. From a practical point of view,

the pattern may serve as a tool for managers. It shows how to exploit network interactions in order to adjust to VUCA conditions.

Concerning the limitations of the paper, I would notice that despite the fact that implemented research methods provided all expected data which led to achieving research objectives, natural character of case studies requires cautiousness regarding the scale of generalizing results. My intention was to provide information which lets us understand some phenomenon which has not yet been fully identified and explored. Therefore, these limitations ought to be treated as a starting point for further scientific explorations (Yin, 2014). Firstly of all, I suggest that expanding and deepening the results could be achieved by implementing Necessary Condition Analysis. This method would allow diagnosing hierarchy of network relations' features in terms of contributing to limiting negative consequences of VUCA environment. Other research area could concentrate on a *structural* dimension of network; how organizations react to VUCA conditions in terms of modification of network structure (for instance, implementation of green deal resulting in change of suppliers, etc.), and then linking it to the changes in a relational dimension. This would result in presenting more complex picture of the dynamics of inter-organizational networks in demanding VUCA environment.

## Acknowledgements

The research was carried out within the confines of a research project financed by Polish Ministry of National Defence (31/WZ/18/SMON).

## References

1. Anderson, J.C., Håkansson, H., Johanson, J. (1994). Dyadic business relationships within a business network context. *Journal of Marketing*, 58(4), pp. 1-15.
2. Barbier, L.T., Robertson, K. (2022). Enhancing Public Service Delivery in a VUCA Environment in South Africa: A Literature Review. *Rudn Journal of Public Administration*, 9(4), pp. 418-437.
3. Bryson, J.M., Crosby, B.C., Stone, M.M. (2015). Designing and implementing cross-sector collaborations: Needed and challenging. *Public Administration Review*, 75(5), pp. 647-663.
4. Camagni, R. (1995). Global network and local milieu: towards a theory of economic space. In: S. Conti, E.J. Malecki, P. Oinas (Eds.), *The industrial enterprise and its environment: spatial perspectives*. Aldershot.

5. Cavalcanti, T.V.V., Giannitsarou, Ch., Johnson, Ch.R. (2017). Network cohesion. *Economic Theory*, 64(1), pp. 1-21.
6. Choi, K., Lee, D. (2022). Network externalities and endogenous timing in managerial firms. *Managerial and Decision Economics*, 5, pp. 1462-1475. <https://doi.org/10.1002/mde.3467>
7. Czakon, W. (2005). Istota relacji sieciowych przedsiębiorstwa [Idea of organization's network relations]. *Przegląd Organizacji*, 9, pp. 10-13.
8. Czakon, W. (2007). *Dynamika więzi międzyorganizacyjnych przedsiębiorstwa [Dynamics of inter-organizational ties]*. Wydawnictwo Akademii Ekonomicznej im. Karola Adamieckiego.
9. Czakon, W. (2012). *Sieci w zarządzaniu strategicznym [Networks in strategic management]*. Oficyna Wolters Kluwer Business.
10. D'Mello, R., Toscano, F. (2020). Economic policy uncertainty and short-term financing: The case of trade credit. *Journal of Corporate Finance*, 64. <https://doi.org/10.1016/j.jcorpfin.2020.101686>
11. Dyer, J. (1997). Effective interfirm cooperation: How firms minimize transaction costs and maximize transaction value. *Strategic Management Journal*, 18(7), pp. 535-556.
12. Easton, G. (1992). Industrial networks: A review. In: B. Axelsson, G. Easton (Eds.), *Industrial networks. A new view of reality*. Routledge.
13. Edelenbos, J., Klijn, E.H. (2007). Trust in complex decision-making networks: a theoretical and empirical exploration. *Administration and Society*, 39(1), pp. 25-50. <https://doi.org/10.1177/0095399706294460>
14. Eisenhardt, K.M. (1991). Better stories and better constructs: The case for rigor and comparative logic. *Academy of Management Review*, 16(3), pp. 620-627. <https://doi.org/10.2307/258921>
15. Eisenhardt, K.M., Graebner, M.E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), pp. 25-32. <https://doi.org/10.5465/amj.2007.24160888>
16. Flyvbjerg, B. (2012). Five misunderstandings about case study research. In: M. Savin-Baden, C. Howell Major (Eds.), *Qualitative research: The essential guide to theory and practice*. Routledge.
17. Ford, D., Gadde, L.E., Håkansson, H., Snehota, I. (2003). *Managing business relationships*. Wiley.
18. Gebo, E., Bond, B.J. (2019). Improving inter-organizational collaborations: An application in a violence reduction context. *The Social Science Journal*, pp. 1-9. <https://doi.org/10.1016/j.sosci.2019.09.008>
19. Goerdel, H.T. (2006). Taking initiative: Proactive management and organizational performance in networked environments. *Journal of Public Administration Research and Theory*, 16(3), pp. 351-363. <https://doi.org/10.1093/jopart/mui051>

20. Graebner, M.E., Martin, J.A., Roundy, P.T. (2012). Qualitative data: Cooking without a recipe. *Strategic Organization*, 10(3), pp. 276-284.
21. Håkansson, H., Snehota, I. (1989). No business in an island: The network concept of business strategy. *Scandinavian Journal of Management*, 5(3), pp. 187-200. [https://doi.org/10.1016/0956-5221\(89\)90026-2](https://doi.org/10.1016/0956-5221(89)90026-2)
22. He, F., Ma, Y., Zhang, X. (2020). How does economic policy uncertainty affect corporate Innovation? Evidence from China listed companies. *International Review of Economics & Finance*, 67, pp. 225-239.
23. Hu, Q., Khosa, S., Kapucu, N. (2016). The intellectual structure of empirical network research in public administration. *Journal of Public Administration Research and Theory*, 26(4), pp. 593-612. <https://doi.org/10.1093/jopart/muv032>
24. Kilduff, M., Tsai, W. (2003). *Social networks and organizations*. Sage Publications.
25. Kim, J.Y. (Rose), Howard, M., Pahnke, E.C., Boeker, W. (2016). Understanding network formation in strategy research: exponential random graph models. *Strategic Management Journal*, 37(1), pp. 22-44.
26. Mason, J. (2018). *Qualitative researching*. Sage Publications.
27. Mayne, J., Wileman, T., Leeuw, F. (2003). Networks and partnering arrangements: New challenges for evaluation and auditing. In: A. Gray, B. Jenkins, F. Leeuw, J. Mayne (Eds.), *Collaboration in public services: The challenge for evaluation*. New Brunswick: Transaction Publishers.
28. Miles, M.B., Huberman, A.M., Saldana J. (2014). *Qualitative data analysis. A methods sourcebook*. Sage Publications.
29. Newman, J., Barnes, M., Sullivan, H., Knops, A. (2004). Public participation and collaborative governance. *Journal of Social Policy*, 33(2), pp. 203-223. <https://doi.org/10.1017/S0047279403007499>
30. Pedersen, S., Clausen, Ch., Jørgensen, M.S. (2022). Navigating value networks to co-create sustainable business models: An actionable staging approach. *Business Strategy and the Environment*, 2023/32, pp. 240-258. <https://doi.org/10.1002/bse.3127>
31. Peterman, A., Kourula, A., Levitt, R. (2020). Organizational roles in a sustainability alliance network. *Business Strategy and the Environment*, 29(8), pp. 3314-3330. <https://doi.org/10.1002/bse.2574>
32. Rath, C.R., Grosskopf, S., Barmeyer, Ch. (2021). Leadership in the VUCA world – a systematic literature review and its link to intercultural competencies. *European Journal of Cross-Cultural Competence and Management*, 5(3), p. 195. DOI:10.1504/EJCCM.2021.116890
33. Sharkey, T.C., Nurre Pinkley, S.G., Eisenberg, D.A., Alderson, D.L. (2021). In search of network resilience: An optimization-based view. *Networks*, 2, pp. 225-254. <https://doi.org/10.1002/net.21996>

34. Siciliano, M.D., Wang, W., Medina, A. (2020). Mechanisms of network formation in the public sector: A systematic review of the literature. *Perspectives on Public Management and Governance*, gvaa017. <https://doi.org/10.1093/ppmgov/gvaa017>
35. Srivastava, S.B. (2015). Intraorganizational network dynamics in times of ambiguity. *Organization Science*, 26(5), pp. 1365-1380.
36. Taskan, B., Junça-Silva, A., Caetano, A. (2022). Clarifying the conceptual map of VUCA: a systematic review. *International Journal of Organizational Analysis*, 30(7), pp. 196-217. <https://doi.org/10.1108/IJOA-02-2022-3136>
37. Tatarynowicz, A., Sytch, M., Gulati, R. (2016). Environmental demands and the emergence of social structure: technological dynamism and interorganizational network forms. *Administrative Science Quarterly*, 61(1), pp. 52-86.
38. Xu, Z. (2020). Economic policy uncertainty, cost of capital, and corporate innovation. *Journal of Banking & Finance*, 111. <https://doi.org/10.1016/j.jbankfin.2019.105698>
39. Yin, R.K. (2014). *Case study research: Design and methods*. Sage Publications.
40. Zaheer, A., Gozubuyuk, R., Milanov, H. (2010). It's the connections: The network perspective in interorganizational research. *Academy of Management Perspectives*, 24(1), pp. 62-77.