

SOCIAL CAPITAL AND RESILIENCE OF PUBLIC GOVERNANCE NETWORKS

Katarzyna SIENKIEWICZ-MAŁYJUREK

Silesian University of Technology, Faculty of Organization and Management, Department of Management;
katarzyna.sienkiewicz-malyjurek@polsl.pl, ORCID: 0000-0002-0915-5776

Purpose: This article attempts to identify the impact of social capital factors on the resilience of governance networks.

Design/methodology/approach: Achieving the research goal is based on the questionnaire survey conducted among 199 public servants in Polish counties examined with the stepwise regression analysis.

Findings: The results point out that the importance of social capital is different, depending on the resilience dimension. When considering coping with threats only, relational dimensions of social capital are of fundamental importance. In adaptation to new operating conditions, the relational dimension still dominates, but a structural dimension factor also appears. When resilience links to transformation, all types of social capital are needed.

Originality/value: These results add value to resilience theory in public governance by identifying the impact of social capital on the resilience of public governance networks.

Keywords: resilience, social capital, governance networks, public governance.

Category of the paper: Research paper.

1. Introduction

Public governance occurs in networks, across organisational boundaries, in a set of overlapping jurisdictions, and interdependencies between resources and competencies (Duit 2016; Sørensen and Torfing, 2004). Such organisational complexity causes governance networks to struggle with many turbulences (Ansell et al., 2017). Moreover, organisational constraints, financial crises, natural disasters, political conflicts, terrorism, and pandemics increase in number, scale, and frequency. For this reason, the concept of resilience is gaining more and more importance in governance networks (Linkov and Trump, 2019; Duit, 2016).

Public governance networks' resilience is based on the combination of resources, knowledge, and competencies of many independent organisations that result from relationships between individuals from different units and activities undertaken across organisational boundaries (Kim et al., 2020; Duit, 2016; Hillmann and Guenther, 2021). Therefore social capital seems to be of crucial importance, but there is very little evidence of its influence on the resilience of public governance networks. Research in this area is mainly conducted on its impact on the effectiveness of public governance networks and not from the holistic perspective of social capital but its selected factors, e.g. trust (Klijn et al., 2010; Bouckaert and Van de Walle, 2003), norms and values (Kooiman and Jentoft, 2009; Sienkiewicz-Małyjurek, 2020), and network structure (Scott and Thomas, 2017). The relationships between social capital and resilience are researched primarily in the field of emergency management (e.g. Aldrich and Meyer, 2015; Linnenluecke and McKnight, 2017), tourism and hospitality (e.g. Musavengane and Kloppers, 2020; Chowdhury et al., 2019), sociology (e.g. Pinkerton and Dolan, 2007; Ungar, 2011), and supply chain management (e.g. Johnson et al., 2013; Zaczyk and Liebert, 2020). Although these studies indicate positive relationships between social capital and resilience, it is still unknown what exactly factors of social capital have this positive influence on resilience. In public governance networks, this issue is particularly underdeveloped. Therefore, identification and understanding the relationship between social capital factors and determinants of the resilience of public governance networks is the aim of the research presented in this paper.

2. Theoretical background

Public governance is complex as "public policy is formulated and implemented through a plethora of formal and informal institutions, mechanisms and processes" (Sørensen and Torfing, 2004, p. 3). In this perspective, the coordination of shared resources is based on governance networks that are defined as "more or less stable patterns of social relations between mutually depended actors, which cluster around a policy problem, a policy programme, and/or a set of resources and which emerge, are sustained, and are changed through a series of interactions" (Klijn and Koppenjan, 2016, p. 11).

However, conducting joint activities in public governance networks is tough, and undertakings in this area could be unsuccessful (Huxham and Vangen, 2005; Sienkiewicz-Małyjurek, 2021; Król and Zdonek, 2021). Problems may arise from network relations that base on negotiations which do not always lead to a consensus due to different procedures of actions, perception of the problems, existing misunderstandings, antagonisms, conflicts, etc. (Sienkiewicz-Małyjurek, 2021; Cristofoli et al., 2017; Sørensen and Torfing, 2004; Klijn and Koppenjan, 2000). Much research has been devoted to the concepts of trust-building,

commitment, and reciprocity in public governance networks (Klijn et al., 2010; Sørensen and Torfing, 2008). Still, no universal method has been found to solve the emerging problems, as negotiations are not easy as they involve giving up some of one's interests. The complex structure of public governance networks can also pose a problem as they do not replace bureaucratic organisations but add structural complexity (O'Toole, 2015).

Conditions such as economic fluctuations, financial crises, natural disasters, pandemics, and social threats are also just some of the challenges all contemporary organisations face. Uncertainty, discontinuity, and turbulence are typical environmental characteristics that translate into the conditions for functioning public organisations and public governance networks (Ansell et al., 2017, Linnenluecke, 2017). As a result, public governance networks' internal and external complexity creates the need to search for ways to survive and evolve. For this reason, the concept of resilience is gaining more and more attention in scientific research and is currently being studied in public administration.

Resilience is "the process by which an actor (i.e., individual, organisation, or community) builds and uses its capability endowments to interact with the environment in a way that positively adjusts and maintains functioning prior to, during, and following adversity" (Williams et al., 2017, p. 742). The adoption of this concept in public governance is because more and more often is indicated that resilience affects the effectiveness and innovativeness of the everyday processes of public service delivery (Duit, 2016; Linkov and Trump, 2019). These processes are carried out in networks (Kozuch and Sienkiewicz-Matyjurek, 2015; Keast et al., 2014; Klijn and Koppenjan, 2016), are complex (Kenis and Provan, 2009; Cristofoli and Markovic, 2016), and the context of their provision is characterised by turbulence and dynamics of change (Ansell and Trondal, 2018). Resilience helps deal with situations where resources in public governance networks are scarce and decision-making time is short. In the event of constraints and disruptions in providing public services, it allows finding a new way to implement them. For this reason, the development of research on the resilience of public governance networks seems to be important and necessary.

Researchers use various factors in resilience analyses (Hillmann and Guenther, 2021). These include improvisation and bricolage, virtual role systems, the attitude of wisdom, respectful interaction (Weick, 1993; Weick et al., 1999), cognitive, behavioural, and contextual dimensions (Lengnick-Hall and Beck, 2005), anticipation, coping, adaptation (Duchek, 2020). In this article, three resilience dimensions were adopted for the analysis (Sienkiewicz-Matyjurek, 2022):

- Coping: appropriate preparation of actions to return to stabilization.
- Adaptation: the capability to modify rules and actions according to the circumstances resulting from threats.
- Transformation: changes necessary to be introduced in the long term due to the consequences of the threat.

One of the important factors influencing resilience is social capital (Lengnick-Hall and Beck, 2005; Duchek, 2020), which is understood as "the shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that groups of individuals bring to a recurrent activity" (Ostrom, 2000, p. 176). Similarly, Adler and Kwon (2002, p. 17) define social capital as "the goodwill that is engendered by the fabric of social relations and that can be mobilised to facilitate action". Social capital is generally recognised as a metaphor for benefits (Burt, 2000; Kuzior and Sobotka, 2019; Pawłowska, 2018). It increases the possibilities of acquiring, assimilating and using knowledge, facilitates joint problem solving, and fosters innovation (Inkpen and Tsang, 2005; Straub et al., 2020). It is believed that social capital in the situation of threats allows organisations to cope with complexity and turbulence, provide quick access to the information they need, and helps maintain organisational consistency (Aldrich and Meyer, 2015; Delilah Roque et al., 2020).

One of the most popular classifications of social capital contains (Nahapiet and Ghoshal, 1998; Inkpen and Tsang, 2005):

- Structural social capital: network ties, network configuration, and appropriable organization.
- Cognitive social capital: shared language and codes, shared narratives, and
- Relational social capital: trust, norms, obligations and expectations, identification.

This classification is consistent with the findings of Granovetter (1977). He distinguished two types of connections: emotionally marked strong ties (e.g. family, friendly or neighbourly contacts) and more sporadic weak ties related to involvement in various external organisations (e.g. social associations). Social capital includes both strong and weak ties. This article uses the classification of Nahapiet and Ghoshal (1998) to analyse the influence of social capital on resilience.

3. Research methodology

The research was based on a questionnaire survey. It was conducted in December 2019 and January 2020 among randomly selected Polish counties. In Poland, there are 314 land counties and 66 cities with county rights (The administrative division of Poland...). The request to fill in the questionnaire was addressed to heads of county/city with county rights.

The research took into account three adopted resilience dimensions (coping, adaptation, and transformation) and Nahapiet's and Ghoshal's (1998) factors of social capital (network ties, network configuration, and appropriable organisation, shared language and codes, shared narratives, trust, norms, obligations and expectations, and identification). The survey questions were formulated in the form of statements, to which the respondent answered on a 5-point Likert scale.

The CAWI method (Computer-Assisted Web Interview) was used for the research. It is the electronic form of the survey sent via the Internet. The data return takes the form of a data matrix generated in real-time by the respondent. The computer software navigating the online survey monitors the respondent's behaviour coding and the correctness of the path of filtered questions.

As a result of the research, 199 correctly completed questionnaires were used in the analyses. Considering a materiality level of $\alpha=0.05$ and a permissible error of $e = 5\%$, it is a representative research sample. The obtained results were examined with the stepwise regression analysis. This analysis is a method of selecting independent variables for predictive purposes. It consists of the sequential creation of a regression model by removing from the set of all variables those that have the least significant impact on the dependent variable in a given step. The relevant statistic assesses the importance of the variable. Variables are deleted until the best-fit model is obtained. The analyses were carried out using Statistica 13 software. It is a data analysis software package developed by StatSoft Inc.

4. Results

4.1. Reliability and validity analysis

Carrying out the stepwise regression analysis requires prior checking of the reliability and validity of the questions asked. It is necessary to verify whether the measurements reflect the true value of the tested characteristics. It needs to check: 1. the level of correlation between a particular variable and the total result, 2. the squared multiple correlations, and 3. Cronbach's alpha coefficient when removing the variable. The analyses are shown in Table 1.

Table 1.
Reliability and validity analysis

Variable	Scale summary: Mean = 48.5327 Standard deviation = 5.90734 N: 199 Cronbach's alpha: .895299 Standardized alpha: .900928 Avg Cor.: 443156				
	Scale Mean if item deleted	Scale Variance if item deleted	Standard deviation if item deleted	Corrected Item-Total Correlation	Alpha if item deleted
Network ties	44.18593	31.18654	5.584491	0.385354	0.897965
Network configuration	44.41206	29.87041	5.465383	0.593980	0.887588
Appropriable organisation	44.25628	30.46196	5.519235	0.431820	0.896557
Shared language and codes	44.69347	29.16735	5.400680	0.672451	0.883557
Shared narratives	44.69849	28.53221	5.341555	0.744219	0.879645
Norms	44.39698	29.75698	5.454996	0.705107	0.883106
Obligations and expectations	44.82412	28.75801	5.362649	0.581798	0.888980
Identification	44.53769	28.99230	5.384449	0.723936	0.881133
Trust	44.30653	28.96634	5.382039	0.710390	0.881668

Cont. table 1

Coping	44.74372	29.44688	5.426498	0.465030	0.896928
Adaptation	44.39698	29.12381	5.396648	0.741440	0.880668
Transformation	44,40704	29,17603	5,401484	0,683852	0,883054

Source: own elaboration using TIBCO Software Inc. (2017). Statistica (data analysis software system), version 13. <http://statistica.io>.

The obtained results prove the reliability and validity of the adopted research scale. The Cronbach's alpha coefficient for the total score is almost 0.9, and the mean total correlation between the items is 0.44. All the variables have a similar effect on the reliability of the scale, as their correlations to the total score and the internal consistency of the scale are at a comparable level. However, "Network ties", "Appropriable organisation", and "Coping" variables correlate weaker with the total score, but deletion of any of them will not significantly affect the scale accuracy of the entire model. This is indicated by Cronbach alpha if the item is deleted. Moreover, "Coping" represents a dependent variable in which the removal of items is inadvisable.

4.2. Relationships between variables

Before conducting the stepwise regression analysis, the next step is to test relationships between variables. For this purpose, Spearman's Rank-Order Correlation analysis was used, which is a measure used for non-parametric statistical relationships. The obtained results are presented in Table 2. The strongest correlations between the variables are shown in bold.

Table 2.
Spearman's Rank-Order Correlation

Variable	Network configuration	Appropriable organisation	Shared language and codes	Shared narratives	Norms	Obligations and expectations	Identification	Trust	Coping	Adaptation	Transformation
Network ties	0.491	0.342	0.144	0.174	0.269	0.119	0.309	0.303	0.181	0.381	0.356
Network configuration		0.592	0.350	0.478	0.468	0.326	0.386	0.426	0.235	0.433	0.378
Appropriable organisation			0.298	0.239	0.399	0.101	0.263	0.431	0.151	0.389	0.258
Shared language and codes				0.673	0.570	0.570	0.573	0.576	0.359	0.494	0.493
Shared narratives					0.628	0.638	0.675	0.606	0.388	0.538	0.575
Norms						0.507	0.573	0.582	0.384	0.471	0.472
Obligations and expectations							0.536	0.425	0.321	0.460	0.498
Identification								0.627	0.425	0.576	0.521
Trust									0.340	0.595	0.491
Coping										0.469	0.389
Adaptation											0.764

BD removed in pairs; Correlation coefficients are relevant to $p < 0.05000$.

Source: own elaboration using TIBCO Software Inc. (2017). Statistica (data analysis software system), version 13. <http://statistica.io>.

The analysis of the correlation shows fairly strong relationships between analysed variables. "Shared narratives", "Identification", "Trust", and "Adaptation" link the strongest relationships with other variables. Very strong relationships are, for example, between "Adaptation" and "Transformation" (0.76), "Shared narratives" and "Identification" (0.67), "Narratives" and "Codes" (0.67). Strong relationships are also found between the other variables pointed out in bold, for example, "Network configuration" and "Appropriable organisation" (0.592), "Norms" and "Shared language and codes" (0.57). Furthermore, not all of the non-bold correlations are weak. Some of them are average, for example, "Shared narratives" and "Network configurations" (0.48), and "Obligations and expectations" and "Identification" (0.54). The weak statistical relevance of relationships can be observed between "Appropriable organisation" and "Obligations and expectations" (0.1), "Network ties" and "Shared narratives" (0.17), and "Network ties" and "Obligations and expectations" (0.12). However, most of the analysed relationships are strong or average.

The obtained results lead to assume that not all factors of social capital will affect the resilience of public governance networks. Structural social capital is relatively weakly correlated with the other studied dimensions. However, it is necessary to examine these relationships in a more detailed way.

4.3. Stepwise regression analysis

The stepwise regression analysis allows us to identify those explanatory variables that significantly predict the explained variable. Irrelevant factors are not included in the model. Furthermore, this method eliminates the problem of collinearity by taking into account mutual correlations between predictors. The effect of the stepwise regression analysis is building optimal models of relationships between research variables. Results reflecting those variables of social capital that significantly affect a particular variable of resilience are in Table 3. Social capital variables not listed in Table 3 do not affect the resilience of governance networks.

Table 3.

The stepwise regression analysis

N = 199	b*	Std. Error with b*	b	Std. Error with b	t(196)	p
Coping	R = .46600354 R² = .21715930 Adjusted R² = .20511560 F(3,195) = 18,031 p = .000279					
Intercept			0.817993	0.419907	1.948032	0.052846
Identification	0.263898	0.083087	0.346788	0.109184	3.176172	0.001735
Norms	0.170528	0.082809	0.253091	0.122901	2.059307	0.040794

Cont. table 3

Adaptation	R = .70345632 R² = .49485080 Adjusted R2 = .47906489 F(6,192) = 31.348 p = .000000					
Intercept			0.504184	0.279969	1.800861	0.073294
Trust	0.238170	0.074287	0.223277	0.069642	3.206077	0.001576
Identification	0.179230	0.077485	0.171522	0.074153	2.313088	0.021777
Network ties	0.167962	0.056606	0.154045	0.051916	2.967192	0.003388
Obligations and expectations	0.159428	0.068159	0.122526	0.052382	2.339074	0.020360
Appropriable organisation	0.139649	0.058985	0.117459	0.049612	2.367551	0.018900
Transformation	R = .66520848 R² = .44250232 Popraw. R2 = .42805937 F(5,193) = 30.638 p = .000000					
Intercept			0.677892	0.302203	2.243166	0.026023
Shared narratives	0.279241	0.084890	0.268488	0.081621	3.289447	0.001193
Network ties	0.236356	0.056449	0.230050	0.054943	4.187067	0.000043
Obligations and expectations	0.186308	0.072059	0.151955	0.058772	2.585479	0.010461

Source: own elaboration using TIBCO Software Inc. (2017). Statistica (data analysis software system), version 13. <http://statistica.io>.

The regression model proved the significance of individual variables at $p < 0.05$. In the case of "Coping" variable, two predictors were identified: "Identification" and "Norms". They explain 20% of the dependent variable. The model of "Adaptation" dimension is also significant, and its five predictors explain a total of 48% of its variability. "Transformation" variable is explained in up to 43% by "Shared narratives", "Network ties", and "Obligations and expectations". Statistics used (the multiple correlation coefficient R, the significance test t, the slope coefficient of the regression line b) confirm the positive correlation between the examined variables.

The obtained results show that although many factors influence resilience, social capital plays an important role. In particular, there is a significant influence of the factor "Identification" on "Coping" and "Adaptation" and "Network ties" on "Adaptation" and "Transformation". The impact of all dimensions of social capital (structural, cognitive, relational) on the resilience of governance networks is visible but in a varied range. Only the relational dimension of social capital affects "Coping". Adaptation is influenced by the structural and relational dimensions, and "Transformation" by all dimensions of social capital. Moreover, the dimensions of social capital influence higher "Adaptation" and "Transformation" than "Coping." This indicates that they affect the processes of introducing changes and developing public governance networks.

5. Conclusions

The article is based on theory-driven empirical research. It checks which social capital factors identified by Nahapiet and Ghoshal (1998) affect resilience manifested through coping, adaptation, and transformation. The correlation analysis indicates that structural social capital has the least importance in building the resilience of public governance networks (Table 3). It is justified considering the importance of inter-organisational relations in public governance networks and the need for flexibility of joint activities. It can be assumed that rigid structures imposed in advance may limit this flexibility.

However, the stepwise regression analysis indicates that the factors of structural capital influence the two dimensions of resilience: "Adaptation" and "Transformation" (Table 4). Both dimensions of resilience are affected by "Network ties", and "Adaptation" is also affected by "Appropriable organisation". None of the structural and cognitive capital factors affects "Coping", which means that inter-organisational relations play an essential role in governance networks in direct response to an event. In the longer term, when there are changes related to adaptation to new operating conditions, relational capital is still of key importance (especially "Trust" and "Identification"). However, the impact of structural capital on the resilience of governance networks is also visible ("Network ties" and "Appropriable organisation") that proves the importance of the previously developed principles of network organisation in the long run.

Interestingly, a factor of cognitive capital – "Shared narratives" – in the stepwise regression analysis is indicated only in the case of "Transformation" (Table 4). Nevertheless, the correlation analysis demonstrates cognitive capital's significant impact on other social capital factors (Table 3). In the case of "Transformation", "Shared narratives" matters most. Therefore, it can be anticipated that cognitive capital has an indirect impact on the resilience of public governance networks, affecting the remaining determinants of social capital. Moreover, it is of particular importance in the long term of building the resilience of public governance networks.

The obtained results indicate that the ability to deal with emerging problems is needed first. It is also necessary to adapt to new operating conditions, allowing flexible responses to changes. Moreover, relational capital seems to be of key importance, but the other two types of social capital are necessary for the long term. Public managers wanting to ensure the resilience of their governance networks should focus primarily on the relational dimensions of social capital, which develop and properly manage inter-organisational relations. They should also consider the structural and cognitive dimensions of social capital because building resilience in public governance networks, in the long run, depends not only on relational factors but also on appropriate organisational arrangements and building a big picture of the situation.

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