

ANTECEDENTS OF INTER-ORGANISATIONAL COLLABORATION IN PUBLIC SAFETY MANAGEMENT SYSTEM

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Abstract

Background. Inter-organisational collaboration constitutes an important instrument of modern management since it enables considering a given problem from different perspectives and search solutions that go beyond the possibilities of one entity. On the other hand, it is an endeavour that is difficult to realise as it does not always enable achieving the assumed goals. However, public sector organisations are legally obligated to collaborate. In the public safety management system this collaboration is carried out based on the existing legal regulations, accepted safety programs, and signed agreements. Motivation to collaborate, however, is dependent on many other causes, among which the legal obligation does not constitute a sufficient condition. Therefore, it is important to find out what are the antecedents, which constitute the basis for shaping of inter-organisational collaboration.

Research aims. The aim of the research is identification of the antecedents of inter-organisational collaboration in the public safety management system, their dimensions and explanation of the relations between them.

Methodology. The aim of the research was achieved based on a desk research analysis and questionnaire surveys conducted with public safety management system experts. The conducted research and analyses are a result of realisation of a research project entitled “Coordination, communication, and trust as factors driving effective inter-organisational collaboration in the system of public safety management” financed by the funds of the National Science Centre awarded based on decision No. DEC-2012/07/D/HS4/00537.

Key findings. The result of the conducted research is identification of the dimensions of the antecedents of inter-organisational collaboration in the public safety management system.

Keywords: inter-organisational collaboration, antecedents of collaboration, public management, public safety management system.

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INTRODUCTION

Inter-organisational collaboration constitutes an important instrument of modern management since it enables considering a given problem from different perspectives and search for solutions that go beyond the capabilities of one entity. In the public sector it increases the possibilities of providing public services – it enables achieving better efficiency of actions related to solving local problems (Kozuch, 2011; McGuire, 2006; Leung, 2013). In addition, in the public safety management system, which is one of the principal fields of public management (Krzyżanowski, 1999; Kozuch, 2004; Frączkiewicz-Wronka, 2009), it is the basis of action realisation. It is because the tasks realised in this area are based on complementary roles and competences of many units, their properly coordinated work, and communication.

Collaboration in any form is difficult to realise and it does not always enable achieving the assumed goals. International experiences indicated that more than 50% endeavours in this area end in failure (Gulati et al., 2012) and it is better to avoid collaboration if it is not necessary (Huxham & Vangen, 2005). However, public sector organisations are legally obligated to conduct inter-organisational collaboration. In the public safety management system this collaboration is conducted based on the existing legal regulations, adopted safety programs, and signed agreements. However, motivation to collaborate is based on many other causes. It is, therefore, important to learn what are the antecedents, which constitute the basis for shaping inter-organisational collaboration and what are their dimensions and relations between them, which is the goal of this article.

METHODOLOGY

Achievement of the assumed aim was made possible by conducting the following research:

1. Desk research analysis of Polish and foreign literature.
2. Structured direct interviews realised in June 2016 with public safety management system experts, who were asked to assess the strength of the antecedents in the analysed system. The

- following persons took part in the research: 1) representatives of emergency and rescue units, including the Police, National Fire Service, and medical rescue services (36.1% of the studied population), 2) officials dealing with the problematic aspects of safety on the part of local governments (34.9%), and 3) research workers (29%). 100 survey questionnaires were carried out, while 83 properly filled out questionnaires were taken into account in the analyses. The answers were given in the 5-point Likert's scale.
3. Discussion in a circle of 43 experts participating in the questionnaire survey, which enabled to verify and complement the results and facilitated their interpretation. Persons from the emergency and rescue units (34.9%), officials (25.6%), and research workers (39.5%) participated in the discussion.

The approach applied in this publication is based on a two-phase reflective-formative model. According to this approach, based on the analysis of reflective components, a formative research model was constructed. The interpretation of the reflective dimensions was based on the correlations between the indicators and the variable measured by factor loadings. In turn, the analysis of the formative constructs resulted from the interpretation of their weights (Petter et al., 2007). Justification for such approach is recommended in research connected with the appropriateness of applying the PLS-SEM method (Wetzels et al., 2009). Moreover, in order to identify the dimensions in the research model the Principle Component Analysis – PCA was used.

The conducted research and analyses are a result of realisation of a research project entitled “Coordination, communication, and trust as factors driving effective inter-organisational collaboration in the system of public safety management” financed by the funds of the National Science Centre awarded based on decision No. DEC-2012/07/D/HS4/00537.

The analysis of the results was based on the reflective and formative approach including modelling of structural equations and partial least squares study. To this aim the principal component analysis (PCA), correlation tables, Cronbach's alpha coefficient, and factor loading cross analysis were applied.

THEORETICAL BACKGROUND

Inter-organisational collaboration constitutes a process of realisation of common goals based on coordinated performance of partial tasks, which result from work division (Bogacz-Wojtanowska, 2013). It is conducted based on good will, trust, and involvement, in relation to the existing experience in the scope of inter-organisational relations and developed standards. Its nature is positive and evolutionary and it constitutes the opposite of competition. Inter-organisational collaboration is a long-term, durable, as well as dynamic process of cyclic influence, which is oriented on continuous improvement (Sienkiewicz-Małyjurek, 2017). This process is often considered in the “black box” (Fawcett et al., 2012; Ospina & Saz-Carranza, 2010) categories and it is oriented on configuration of the structure and network of relations, building trust and involvement, communication and transferring information, action coordination, and common use of resources (Thomson & Perry, 2006). It is initiated by the existing antecedents and in addition situational conditions and efficiency factors have an impact on it (compare Figure 1).

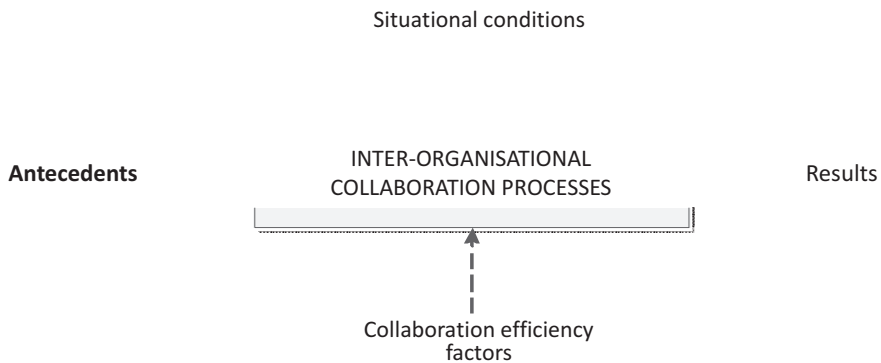


Figure 1. Inter-organisational collaboration course

Source: own elaboration.

Inter-organisational collaboration is a necessary instrument of management in the public safety system. This stems out from the situational conditions, in which organisations of this system must conduct actions and this system’s complexity. Realisation of actions

to the benefit of public safety is conducted in dynamic conditions and the situational factors create the need for an individual approach to every event. It is because situations that put public safety in danger have a different course, place, and time of occurrence as well as a different scale and intensity. They are characterised, above all, by big uncertainty, occurrence of sudden and unforeseen events, high pressure of time, inadequacy of resources as well as various configurations of forces and means of different organisations. Such amount of means and resources is directed to actions which is required in a given situation. At the same time, the volume of interactions and resource and competence dependency increase between organisations. Moreover, the public safety management system is a complex system, which is characterised by the following features:

1. Uniqueness – the specificity of action realisation in the public safety management system causes that the undertaken actions are unique, adapted to the existing conditions and requirements.
2. Intermittence – the intensity of collaboration between public safety management system units is dependent on situational conditions and the need for undertaking common endeavours.
3. Variability – the collaboration processes in the public safety management system change dynamically in time, they evolve in the direction of self-organisation.
4. Complexity – the public safety management system constitutes a complex system of entities involved in the realisation of actions in specific conditions, differently in each case, depending on the situation and state of hazard.
5. Parallelism – in situations of hazard the actions are undertaken by different organisations simultaneously, in the same place and at the same time, according to action procedures, division of responsibility and statutory tasks.

The complexity of the public safety management system and the situational conditions of conducting actions in the situation of hazard cause that it is necessary to develop collaboration processes. In the public safety management system these processes include, above all, communication, resource management, and realisation of common endeavours (Kozuch & Sienkiewicz-Małyjurek, 2015). The collaboration processes are also impacted by factors of inter-organisational collaboration effectiveness, which in the public sector include the following (Kozuch & Sienkiewicz-Małyjurek, 2016): external environment

factors (e.g. government policy; socio-economic conditions present in the region, etc.), factors related to the specificity of collaborating organisations (e.g. organisational structure, work organisation, as well as organisational, professional, and social culture in each organisation; resources of each organisation, adaptability, flexibility, and openness, etc.), factors connected with people's features (e.g. professional competences, informal relationships, readiness to collaborate, etc.); inter-organisational collaboration instruments (e.g. communication, coordination, organisational learning, etc.), as well as relational factors (e.g. trust, roles of each organisation in collaboration, expectations, etc.). The listed factors determine the company's orientation on collaboration.

However, the processes of inter-organisational collaboration appear only when there are premises for it. There are many factors listed among them, the principal ones were presented in Table 1.

Table 1. The antecedents of inter-organisational collaboration in the public sector

Author	Collaboration antecedences
Wood and Gray (1991)	resource dependence; corporate social performance / institutional economics (confluence of macrosocial conditions); strategic management / social ecology (degree of organization of the problem domain and motivation to collaborate); microeconomics (need to maximize efficiency and reduce transaction costs); institutional / negotiated order (need to achieve a shared understanding of a response to problem, need to enhance institutional legitimacy, need for isomorphism with environmental forces); political (need to protect interests in commons resources and need for governance rules, shared transmutational purpose)
Thomson and Perry (2006)	high levels of interdependence; need for resources and risk sharing; resource scarcity; previous history of efforts to collaborate; situation in which each partner has resources that other partners need; complex issues
Bryson et al. (2006)	conveners; general agreement on the problem; existing relationships or networks
Ansel and Gash (2008)	power-resource-knowledge asymmetries; prehistory of cooperation or conflict (initial trust level)
Chen (2010)	resource acquisitions; organisational legitimacy (funding agency requirements, reputation enhancement, building future relationships); partner characteristics (shared vision, prior working relationships); supply-side imperfection
Concha (2014)	social threat responsiveness; lack of resources; institutional

Source: elaborated based on the cited literature.

The collaboration antecedents mentioned in Table 1 constitute an open set, they determine the expected, long-term benefits. Depending on the situation, they can appear individually, jointly, and moreover they can cumulate their influence. According to the works of Helen Dickinson and Helen Sullivan (2014, p. 164), the causes of collaboration lie not only in rational motives, but they go beyond this scope. Such decisions refer also to the social aspects, they are based on values and the specific meanings of collaboration. Studying the antecedents of collaboration enables us to explain why organisations conduct and develop joint actions despite the appearing difficulties.

In the public safety management system, inter-organisational collaboration is statutorily required. Legal regulations obligate the organisations of this system to share information, to mutual assistance, and logistic support, or interaction in action realisation, among others (Journal of Laws 2001 No. 82, item 895 – §5.1; Journal of Laws 1998, No. 161, item 1108 – §5). However, they do not assure that joint actions will be complete, of appropriate quality, and consistent with the expectations of other organisations. Motivation through legal regulations may turn out to be inadequate to achieve at least satisfactory effects. It also does not guarantee that they will be successful. In the subject literature it is emphasised that many management methods should be applied to mobilise organisations for effective collaboration, which is legally imposed on them (Rodríguez et al., 2007; Lowndes & Skelcher, 1998). Taking this into account there is a need for identifying the antecedents of inter-organisational collaboration in the public safety management system.

RESEARCH RESULTS

The identification of the antecedents of inter-organisational collaboration in the public safety management system was conducted based on literature research. To this aim an analysis of Polish and foreign literature, identified owing to the use of such databases as: Web of Science, Scopus, Publish or Perish was used. Next, it was verified, which of the identified factors are present in the public safety management system and only those were included in the study conducted with the experts (compare Table 2).

Table 2. Factors of relational behaviours in inter-organisational collaboration

Symbol	Factor	Statement in the questionnaire
MW1	Collaboration frequency	Organisations in the PSMS realise joint actions on a daily basis
MW2	Duplicating actions	The actions of each PSMS unit do not duplicate each other
MW3	Complementarity of each organisation's actions	The actions of each PSMS unit complement each other
MW4	Operational dependency	The actions of each PSMS organisation are dependent on the actions of other organisation of this system
MW5	Resource dependency	A resource dependency exists between PSMS units
MW6	Existing relations	Each PSMS unit has a good experience in realising joint actions
MW7	Common strategic goals	Each PSMS organisation has common strategic goals
MW8	Common operational procedures	Each PSMS organisation has common operational goals
MW9	Valid legal acts	Legal regulations force PSMS organisation to collaborate
MW10	Situational complexity	The complexity of the situations in which PSMS organisations conduct actions forces them to collaborate
MW11	Feeling of community	PSMS organisations collaborate with each other of their own free will
MW12	Inter-organisational conflicts	There are no conflicts between PSMS organisations

Source: own elaboration.

Based on the identified antecedents of inter-organisational collaboration the correlations existing between them were analysed and their dimensions in the public safety management system were defined. The study of the correlations indicates that the identified factors of the antecedents of inter-organisational collaboration in the public safety management system impact both their complementarity and the common problems in the area under study (compare Figure 2).

There is a strong dependency between many factors. They indicate, among others, that operational dependency corresponds to action complementarity (.22) and common strategic goals (.45). The latter, in turn, correlate with common operational procedures (.34), which, in turn, are linked by a strong dependency of existing relations (.43)

and the valid legal acts (.35). These results denote mutual complementarity of these factors. Based on them, it may be ascertained that endeavours in the public safety management system are realised based on operational procedures, prepared on the basis of the valid legal regulations and strategic goals, taking into account the existing inter-organisational relations. These correlations also indicate that problems exist in the system under study. They result above all from duplicating actions that generates conflicts (.34), negatively corresponds with the existing inter-organisational relations (-.15), and increases situational complexity (-.14). Moreover, these correlations prove that duplicating actions is, among others, a result of the valid legal acts (-.08). Negative correlations are also joined by resource dependency and a feeling of community, which may point out to asymmetry of this dependency. In turn, there are no relationships between the operational dependency and the feeling of community.

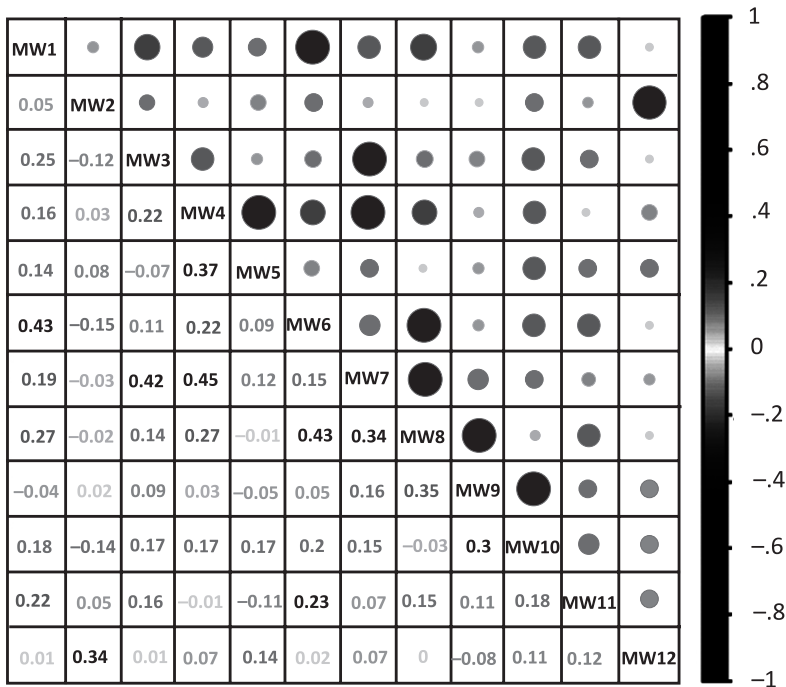


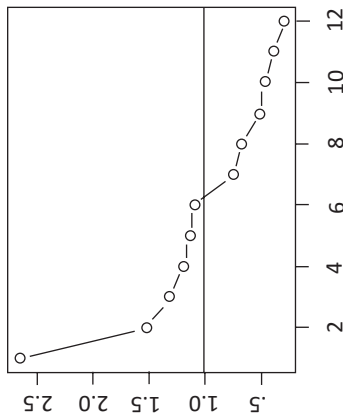
Figure 2. Correlations between the factors of the antecedents of IC in the PSMS

Source: own elaboration.

In further proceeding a study of the factors of the antecedents in the public safety management system was conducted based on Kaiser's criterion and after applying varimax rotation. This enabled finding out that these factors form six dimensions. The results of the conducted analyses were presented in Figure 3.

The identified dimensions include up to three factors of the antecedents of inter-organisational collaboration in the public safety management system. However, the MW10 factor (situational complexity) was identified as a separate dimension. Taking into account the rules of statistical analysis, according to which individual indicators should not constitute individual variables and based on in-depth analyses stating that this factor belongs to situational conditions, it was omitted in further analysis. In the general theory of collaboration, situational complexity imposes cooperative behaviours and forces to turn to other organisations (O'Toole, 1997). However, in the public safety management system it accompanies every day operations and mutual assistance is obligatory. Therefore, it was assumed that the antecedents of inter-organisational collaboration in the public safety management system include five dimensions, which were defined as: existing experience, institutional complementarity, organisational dependency, common problems, and legal and organisational requirements. These dimensions were illustrated in Figure 4.

The identified dimensions explain in 74.3% the degree of variability in the antecedents of collaboration in the public safety management system. They have an impact both individually and they also mutually strengthen their influence. Among the identified factors the following ones have the greatest impact on the variability of the antecedents of collaboration in the public safety management system: existing experience (15%) and next institutional complementarity (13.6%). The subsequent three dimensions have a similar impact on the studied variable and these are the following: organisational dependency, which explains the degree of variability in the antecedents in 12.2%, common problems – 11.7%, and legal and organisational requirements – 11.5%. Based on these results it may be ascertained that legal regulations are not the key determinant of the antecedents of inter-organisational collaboration in the studied system, which depend even to a greater degree on organisational and social conditions. Moreover, the distribution of the values in each dimension indicates that joint realisation of actions in the public safety management system is often present



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## Loadings:
##   PC1  PC6  PC3  PC2  PC4  PC5
## MW1 0.759 0.185 0.066 0.055 -0.116 0.058
## MW2 -0.071 -0.085 0.037 0.819 0.087 -0.207
## MW3 0.114 0.841 -0.162 -0.070 -0.077 0.154
## MW4 0.167 0.453 0.663 0.051 0.122 -0.008
## MW5 0.100 -0.082 0.816 0.136 -0.098 0.201
## MW6 0.826 -0.014 0.123 -0.136 0.153 0.071
## MW7 0.085 0.776 0.252 0.041 0.241 -0.029
## MW8 0.499 0.201 0.075 -0.003 0.671 -0.298
## MW9 -0.103 0.043 -0.080 -0.021 0.871 0.315
## MW10 0.115 0.101 0.154 -0.036 0.138 0.891
## MW11 0.459 0.126 -0.450 0.276 0.059 0.332
## MW12 0.033 0.053 0.075 0.779 -0.103 0.167
##
##   PC1  PC6  PC3  PC2  PC4  PC5
## SS loadings 1.805 1.634 1.459 1.404 1.375 1.236
## Proportion Var 0.150 0.136 0.122 0.117 0.115 0.103
## Cumulative Var 0.150 0.287 0.408 0.525 0.640 0.743
    
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Figure 3. Identification of the dimensions of the antecedents of IC in the PSMS

Source: own elaboration.

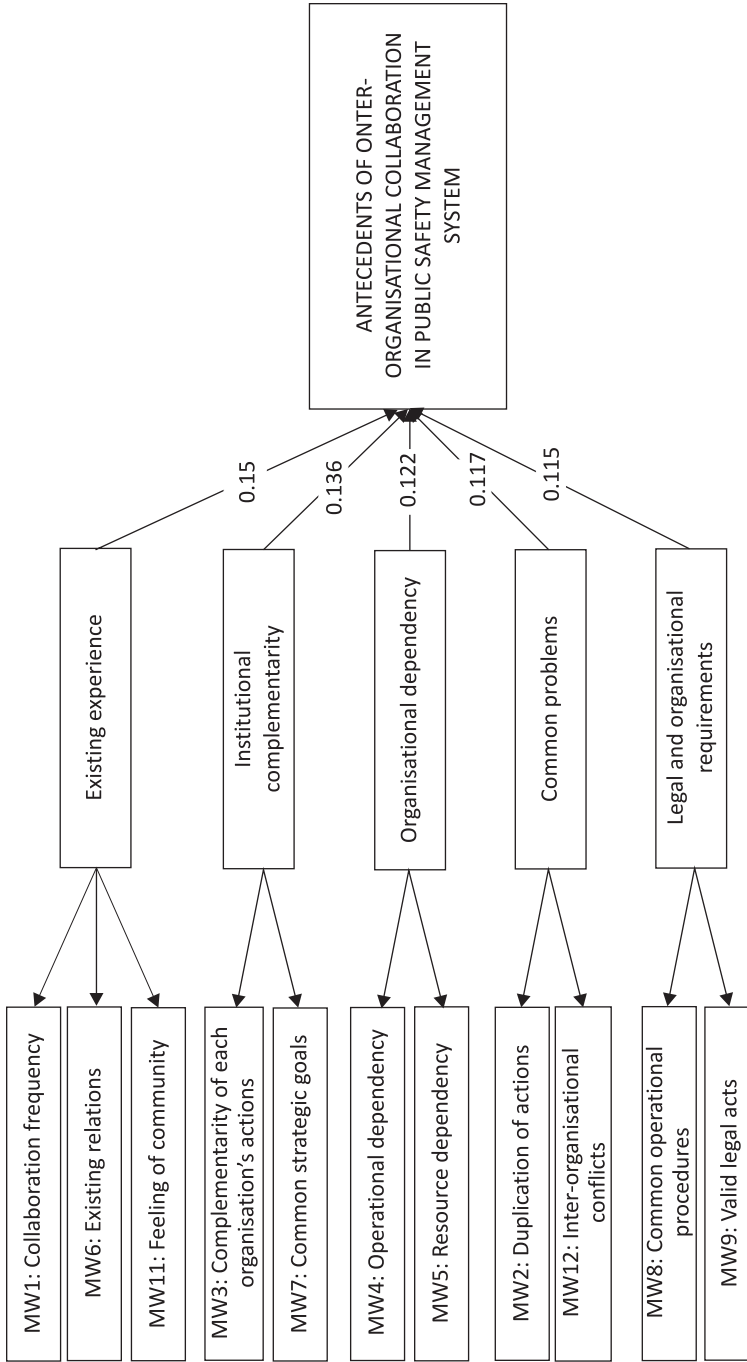


Figure 4. Dimensions of inter-organisational collaboration antecedents in the public safety management system

Source: own elaboration.

in practice. Each organisation is characterised by high awareness of the need to collaborate, however the respondents also pointed out to the doubts related to the appropriateness of realising a part of the actions together.

CONCLUSIONS

The study of the premises which motivate public sector entities to act above organisational borders constitutes an important element in the development of the public management theory. It is because it enables specifying the factors which decide about the existing inter-organisational relations and how they should be stimulated and used in order to increase the effectiveness of common endeavours.

The research conducted in the public safety management system indicates that the following dimensions of the antecedents which impact inter-organisational collaboration in this area to a quite equable degree are as follows: existing experience, institutional complementarity, organisational dependency, common problems, and legal and organisational requirements. These dimensions explain in 74.3% the degree of variability in the premises for collaboration, they have an impact both individually and they also mutually strengthen their influence.

The obtained results also enable ascertaining that although this system's organisations are aware of the need for collaboration, they do however think that such collaboration is not necessary in every single case. Moreover, there are situations in which legal regulations, which obligate to inter-organisational collaboration are not adequate to the existing needs. It is because the legal obligation to collaborate does not constitute a sufficient condition for assuring a high level of joint actions.

REFERENCES

- Ansell, C. & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571.
- Bogacz-Wojtanowska, E. (2013). *Zdolności organizacyjne a współdziałanie organizacji pozarządowych*. Kraków: Monografie Instytutu Spraw Publicznych Uniwersytetu Jagiellońskiego.

- Bryson, J.M., Crosby, B.C. & Stone, M.M. (2006). The design and implementation of cross-sector collaborations: Propositions from the literature. *Public Administration Review*, 66(s1), 44–55.
- Chen, B. (2010). Antecedents or processes? Determinants of perceived effectiveness of interorganizational collaborations for public service delivery. *International Public Management Journal*, 13(4), 381–407.
- Concha, M. (2014). Exploring collaboration, its antecedents, and perceived outcomes in service partnerships of community-based organizations in South Florida. *International Journal of Public Administration*, 37(1), 44–52.
- Dickinson, H. & Sullivan, H. (2014). Towards a general theory of collaborative performance: the importance of efficacy and agency. *Public Administration*, 92(1), 161–177.
- Fawcett, S.E., Fawcett, A.M., Watson, B.J. & Magnan, G.M. (2012). Peeking inside the black box: Toward an understanding of supply chain collaboration dynamics. *Journal of Supply Chain Management*, 48(1), 44–72.
- Frączkiewicz-Wronka, A. (2009). Poszukiwanie istoty zarządzania publicznego. In: A. Frączkiewicz-Wronka (ed.), *Zarządzanie publiczne – elementy teorii i praktyki*. Katowice: Wydawnictwo Uniwersytetu Ekonomicznego.
- Gulati, R., Wohlgezogen, F. & Zhelyazkov P. (2012). The two facets of collaboration: Cooperation and coordination in strategic alliances. *Academy of Management Annals*, 6(1), 531–583.
- Huxham, C. & Vangen, S. (2005). *Managing to Collaborate. The Theory and Practice of Collaborative Advantage*. London–New York: Routledge.
- Koźuch, B. (2004). *Zarządzanie publiczne w teorii i praktyce polskich organizacji*. Warszawa: Wydawnictwo Placet.
- Koźuch, B. (2011). *Skuteczne współdziałanie organizacji publicznych i pozarządowych*. Kraków: Monografie i Studia Instytutu Spraw Publicznych Uniwersytetu Jagiellońskiego.
- Koźuch, B. & Sienkiewicz-Małyjurek, K. (2015). Mapowanie procesów współpracy międzyorganizacyjnej na przykładzie działań realizowanych w bezpieczeństwie publicznym. *Zarządzanie Publiczne*, 3(31), 237–253.
- Koźuch, B. & Sienkiewicz-Małyjurek, K. (2016). Factors of effective inter-organisational collaboration: A framework for public management. *Transylvanian Review of Administrative Sciences*, 12(47), 97–115.
- Krzyżanowski, L. (1999). *O podstawach kierowania organizacjami inaczej: paradygmaty, filozofia, dylematy*. Warszawa: Wydawnictwo Naukowe PWN.
- Leung, Z.C.S. (2013). Boundary spanning in interorganizational collaboration. *Administration in Social Work*, 37(5), 447–457.

- Lowndes, V. & Skelcher, C. (1998). The dynamics of multi-organizational partnerships: An analysis of changing modes of governance. *Public Administration*, 76(2), 313–333.
- McGuire, M. (2006). Collaborative public management: Assessing what we know and how we know it. *Public Administration Review*, 66(s1), 33–43.
- O'Toole, L.J.Jr. (1997). Treating networks seriously: Practical and research-based agendas in public administration. *Public Administration Review*, 57(1), 45–52.
- Ospina, S.M. & Saz-Carranza, A. (2010). Paradox and collaboration in network management. *Administration and Society*, 42(4), 404–440.
- Petter, S., Straub, D. & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly: Management Information Systems*, 31(4), 623–656.
- Rodríguez, C., Langley, A., Béland, F. & Denis, J.-L. (2007). Governance, power, and mandated collaboration in an interorganizational network. *Administration and Society*, 39(2), 150–193.
- Regulation of the Minister of Internal Affairs and Administration of 31 July 2001 on the detailed rules for management and cooperation of fire protection units involved in the rescue operation. Journal of Laws 2001, No. 82, item 895.
- Regulation of the Minister of Internal Affairs and Administration of 18 December 1998 on defining detailed rules of cooperation of specialist armed protection formations with the police, fire protection units, civil defense and municipal guards. Journal of Laws 1998, No. 161, item 1108.
- Sienkiewicz-Małyjurek, K. (2017). *Współpraca międzyorganizacyjna w systemie zarządzania bezpieczeństwem publicznym*. Warszawa: Wydawnictwo Naukowe Scholar.
- Thomson, A.M. & Perry, J.L. (2006). Collaboration processes: Inside the black box. *Public Administration Review*, 66(s1), 20–32.
- Wetzels, M., Odekerken-Schröder, G. & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly: Management Information Systems*, 33(1), 177–196.
- Wood, D.J. & Gray, B. (1991). Toward a comprehensive theory of collaboration. *The Journal of Applied Behavioral Science*, 27(2), 139–162.