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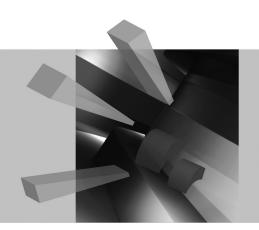
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Wrocław University of Economics

COHESION AS THE DIMENSION OF NETWORK AND ITS DETERMINANTS

Summary The article presents considerations due to network cohesion and the attempt to find its potential determinants. There is little knowledge in the literature about cohesion as the dimension of network and there is not a list of factors ensuring to obtain network cohesion in order. Consequently, the article may contribute to broaden the knowledge about network cohesion and its determinants. Additionally, the article points the need of research on seeking relations and their character of factors influencing network cohesion degree.

Keywords: cohesion, network, network cohesion determinants.

1. Introduction

The purpose of the article is to present the notion of network cohesion as one of the most important dimensions (apart from i.e. network density, network centrality, and degree distribution) characterizing network. Furthermore, the next goal is the theoretical attempt to find potential determinants of network cohesion since in the literature there is not a reinforced theory and research due to factors having an impact on network cohesion and due to mutual relationships between these determinants. Consequently, the first part of the article concerns the notion of network cohesion. Some definitions and approaches connected with network cohesion are presented. Secondly, proposed determinants of network cohesion such as exchange and reciprocity, commitment, common interest, values, loyalty, trust, and social capital are shown. The considerations are finished by the figure (Figure 1) illustrating deductive relationships between network cohesion determinants.

2. Network cohesion – the notion

In the beginning, research on networks concentrated on small groups and structures of organizations. Individual positions and connection forms were determined. The aspect of network cohesion appeared when structure features began to be considered.

A clear difference between notions: "coherence" and "cohesion" is not visible in the literature. According to the dictionary, "coherence" means "the situation in which all the parts of something fit together well", and "cohesion" means "the act or state of sticking together". The adjective "coherent" means "logical and well organized, easy to understand and clear", and "cohesive" means "forming a united whole" or "causing people or things to become united". Due to physics and chemistry, cohesion is perceived as the force causing molecules of the same substance to stick together [Oxford Advanced Learner's Dictionary 2000, p. 243]. As there are no unambiguous differences between these two notions, they will be used interchangeably in the article

According to Strategor, network cohesion as one of the dimensions of network (apart from activation and combinative potential) is treated as the degree of relations intensity among particular elements of network and also as relations character [Strategor 2001, p. 393]. Due to K. Łobos, network cohesion/coherence is one (apart from flexibility or dynamics, coordination, and the scale of action) of dimensions of network organizations, which reflects the features of connection between network participants at a given moment or the character/force of relations between network participants, the direction of these relations and the proportion of active relations to inactive ones. As for the force/character of relations between network elements, K. Lobos distinguishes three types of cooperation; cooperation based on mutual trust (it is the least long-lasting cooperation), cooperation based on formal contracts, and cooperation based on the personal union or/and capital relations (the most longlasting cooperation). The least coherent arrangements are close to model network (virtual) organizations, the most coherent order is close to such organizations as a concern and holding. The lowest value of cohesion can be expressed by the formula n(n-1), and the highest value of cohesion can be expressed as 3n(n-1) where n means the number of elements in network [Łobos 2005, p. 182-185].

Network cohesion constitutes a parallel with network density, network centrality, and degree distribution, as well as it is a global feature of network. Network cohesion should not be analyzed without taking into consideration network density with regard to the fact that network density means the proportion of existing relations to all possible relations. Consequently, network density describes the degree of network cohesion. The value of network density is high when all network nodes create one group in which nodes are strictly connected or when the network is divided into many groups that are highly internally connected but not highly connected with each other [Batorski, Zdziarski 2009, p. 172]. Network with a high level of density facilitates the development of group norms, expectations, particular behavior, decreases the risk connected with exchange and increases efficiency of the exchange [McFadyen, Semadeni, Cannella 2009, p.552]. It also facilitates communication and cooperation among the participants of network [Coleman 1988, p. 95-120; Granovetter 1973, p. 1360-1380]. Network density includes the scope of overlapping bonds among the participants of network [Marsden, Campbell 1984, p. 482-501]. Network density is

measure complementing category of directed network and it constitutes the proportion of reciprocated relations (the number of mutual choices) to the maximum number of mutual choices as well [Batorski, Zdziarski 2009, p. 172]. Consequently, it shows the degree of relations density among network nodes. According to other authors, network cohesion shows the existence or shortage of so-called communication gaps understood as structural cracks what makes information or knowledge not reach particular network nodes [Stepka, Subda 2009]. It seems that centralized network divided into centers and peripheries is opposite to cohesive network is. Homophily frequently leads to the division of network into dense parts slightly connecting each other (clusters) [Easley, Kleinberg 2010, p. 87] (in the literature two types of homophily are used: homophily based on status (i.e. race, ethnicity, age, religion, education) and homophily based on values (i.e. attitudes, beliefs) [Lazarsferd, Merton 1954, p. 18-66]). Due to network participants that are structurally similar to each other, interpersonal communication and participation in mutual network positions is more probable what may cause higher influence among particular network participants [McPherson, Smith-Lovin, Cook 2001, p. 428]. A sense of similarity is the source of positive reinforcement and it fulfills a motivating function. The identification with a chosen object (i.e. with an enterprise or network) creates a sense of closeness and safety. In hierarchical network with asymmetric connections, the network participants have to use common and complementary connections in order to obtain the access to the same resources. Clusters inside the network organize these connections in more or less limited coalitions or fractions [Wellman 1988, p. 40-47]. A cluster with given density p is a set of nodes. Each node in the set of nodes possesses at least p fractions of its neighbors from the network in a given set. Each node in a cluster has a recommended fraction of its friendly relations with other nodes of a given cluster and implicates a particular level of cohesion in the cluster [Easley, Kleinberg 2010, p. 574]. Cohesion of network structures depends on the type of relations between nodes and on the number, variety, and density relations between nodes. Relations between nodes can be rational (stable, sensible) or emotional (loose, spontaneous). For instance, an enterprise producing one-type products and having consolidated tradition will have more cohesion in comparison with the group of entrepreneurs who diversify their business activity due to one product [Malara 2006, p. 115; Strategor 2001, p. 393]. It is possible to distinguish subgroups in the network. Coherent groups are the groups of actors who have relatively strong, direct, intensive, frequent, and positive relations. The characteristics of cohesive subnetwork are based on such features of network as reciprocity, closeness, availability of subgroup participants, and the frequency of relations among subgroup participants [Batorski, Zdziarski 2009, p. 167]. A clique is the group having a high level of cohesion inside network. It is the biggest possible subgraph (the set of completely connected nodes). Members of the clique should have relations with each member of the same clique. Additionally, n-cliques, n-clans, k-cores, m-slices are other relatively coherent subnetworks. T. Menon and K.W. Philips present three components of cohesion:

attachment, mutual commitment and a mutual sense of affiliation significance. They operationalize cohesion as probability of choosing staying in the group (in network in this case), closeness, and attachment [Menon, Philips 2010, p. 4-7]. Their research presents also interrelationships between a degree of group cohesion and uncertainty of actions – the higher level of cohesion the lower level of uncertainty of actions [Menon, Philips 2010, p. 10]. In network methods of planning production, coherent network is the network in which every event has at least one "entering" action and at least one "leaving from the event" action. The event that does not precede another event cannot occur. The exception is the final event which is the last network link.

K. Semlinger distinguishes following features of network attitude: exchange, commitment, cooperation, reciprocity, loyalty and trust, autonomy, legitimacy, effort, and competition [Semlinger 2008, p. 556]. W. Czakon proposes three attributes of network relations: exchange, commitment, and reciprocity [Czakon 2005, p. 11-13].

Taking into consideration described characteristics of cohesion/coherence and attributes of a network approach, it seems that the following characteristics (determinants) – exchange, reciprocity, commitment, common interest, common values, loyalty, trust, and social capital – are the most important in order to obtain network cohesion. Exchange basing on reciprocity may on one hand be implicated by commitment, common interest, common values, loyalty, trust, and social capital. On the other hand, exchange may contribute by mentioned implications (independent variables) to the increase or decrease of the level of network cohesion/coherence (a dependent variable)

3. Exchange, reciprocity

Social association can be defined as material or non-material and more or less rewarding or expensive exchange of actions between at least two participants [Homans 1961, p. 31]. P.S. Ring and A.H. Van de Van presented four types of exchange relations: market, hierarchical, recurenting, and relational ones [Ring, Van de Van 1992, p. 483-498]. The difference between recurenting and relational bonds results from the level of perceived risk and trust – due to relational bonds, the level of both risk and trust is high. An exchange between organizations is frequently used to deepen relations between equal partners. Nevertheless, an exchange may also be the cause of status diversification. According to P. Blau, social exchange refers to voluntary actions of people motivated by reciprocity of other people. The processes of exchange are the mechanisms of regulating social interactions and create favourable conditions for developing social network. Emerging norms, which regulate and limit exchange transactions, include basic and common reciprocity norms that support meeting obligations. Social exchange requires trust connected with meeting obligations. When people meet their obligations, they prove that they are worth being trusted. Thus, when mutual services develop, mutual trust increases as well. As trust is the basis of stable social relations and obligations resulting

from exchange increase trust, there are mechanisms of extending obligations and enhancing bonds of unpaid obligations and trust. P. Blau also claims that exchange transactions determine a dominant exchange proportion what makes that the tendency to equalize transactions occurs. The reason for this situation is that a serious deviation from average exchange conditions creates strong incentives for one of partners to abandon the relation. Social exchange results in indefinable obligations which meeting depends on trust since they cannot be extorted when there is a lack of binding contracts. Nevertheless, trust needed by social exchange is created in the process of adjusting and gradually increases in the process of exchange [Blau 2006, p. 82-92]. Many social relations are exchange relations. The unit having in network the position giving many possibilities for exchange can take more advantages than units having relatively less possibilities for exchanging [Loyaglia 2006, p. 107-129]. W. Czakon presented two ways of understanding reciprocity: reciprocity based on power and reciprocity based on community. The approach based on power concerns enterprises' attempts to take control over partners' resources and it is analyzed in three dimensions: a level of mutuality, symmetricalness, and power structure. The approach based on mutuality emphasizes that establishing network relations is the way of attaining goals by cooperation with other enterprises and refers to balance, bilateralism, and equality of sides. Reciprocity is the element of assessing the bonds by relation sides and implicates creating, verifying, and modification or finishing the relation. A sense of reciprocity may constitute the condition of remaining cooperation [Czakon 2005, p. 12-13].

4. Commitment

Network commitment is the process of participation using the potential of network participants, which is designed to encourage participants to take care of a network success [Cotton 1993, p. 3]. It is also connected with orientating elements in the direction of network in the context of loyalty, identification, and participation [Robbins, Coulter 2005, p. 346]. There can be distinguished three elements of commitment: belief in network goals and acceptance of these goals, willingness to make efforts for network, and strong desire of keeping participation in network. Commitment, similarly to lovalty, has the element of an attitude and behavior. According to commitment in the context of an attitude, it can be assumed that commitment means both a level of identifying particular participants with other network participants and willingness to make additional efforts for network [Porter et al. 1974]. Taking into account a behavioral aspect of commitment, it can be said that commitment is a state of attaching an organization to network expressed by particular behavior [Salancik 1997]. G.J. Meyer et.al. consider three dimensions of organizational commitment: affective, existence, and prescriptive commitment [Meyer, Allen, Smith 1993, p. 538-551]. Affective commitment in network is described as a level of identifying an organization with network and it is conditioned by a degree of fulfilling individual needs and expectations due to network. Developing affective commitment is important due to creating loyalty. Existence commitment concerns individual work needs for network and it is determined by costs of abandoning network. Prescriptive commitment is determined by social norms defining a level of devoting to an organization. It is also connected with the perception of obligation of staying in network and is based on obligation reciprocity what constitutes a basis of social exchange theory. Prescriptive commitment is based on transactional obligation and organizational norms [Stankiewicz-Mróz 2004, p. 164].

Network relations are distinguished by a commitment level. W. Czakon presents four types of commitment in relations: operative commitment, informational commitment, social commitment, and investment commitment. He emphasizes that commitment in relations is the mechanism protecting against opportunism. Operative commitment is characterized by transaction recurrence with a small number of suppliers and economy of scale. Informational commitment concerns sharing extensive information and the more effective protection, the higher level of opportunism as well. Social commitment is based on trust and other protecting mechanisms. It is also effective protection in the conditions of low level of opportunism. Investment commitment results in co-specialized resources and it is a strong protecting mechanism regardless of the level of opportunism [Czakon 2005, p. 12]. Opportunist behavior usually causes elimination from a network system and shortage of freelancing from other participants [Gulski 2008, p. 41-42].

Commitment in relations in network influences the level of centrality of a given system. The higher commitment in all relations in network, the higher level of centrality of a given actor as well [Batorski Zdziarski, 2009, p. 164].

5. Common interest

Mutual interactions in network might result from common interest of network participants. According to P. Blau, it seems to be typical of social relations that people engaged in relations have some common interest and some contradictory interest. It is necessary to invest in establishing and keeping stable social relationships and it is useful for each side of the relation when other participants have more obligations in order to keep further participation in the relation. Common interest in keeping mutual ties exists parallel with the conflict of interest resulting from the fact whose input ought to contribute to their behavior. In every exchange transaction every participant hopes to take many advantages and few disadvantages, however, the participant has to reach an agreement in order to gain some advantages. Mutual and contradictory interest coexistence means that cooperators always make conflict decisions in the beginning and identical ones in the end. More desired advantages continuously change in the process of both manipulation between partners and attempting alternative possibilities to crystallize stable social relations [Blau 2006, p. 82-92]. The moment of crystallizing stable relations creates favorable conditions to ensure network cohesion

6. Values

According to P. Blau, different types of mutual values can be understood as the means of social transactions that widen the range of social interaction and the structure of social relations in a social space and time. An agreement on social values is the basis of widening the scale of social transactions beyond the boundary of direct social relations. P. Blau defines following types of values that are very important in network relations and in obtaining network coherence: particularistic values, universal values, social values rendering power, and opposition ideals [Blau 2006, p. 94-106].

Universal values cause social status diversity as commonly appreciated features or behavior give power and prestige to people who possess such features and behavior. Particularistic values create borderlines between subgroups in community since the tendency of appreciating own features links units having given characteristics and separates from people having different attitudes. Particularistic social values are the media of social integration and solidarity. Separate values shared by community members connect them in a sense of mutual social solidarity, broaden the scope of integration bonds beyond boundaries of a personal attraction sense and can contribute to a high level of given subgroup's network coherence. Separate values are characteristic features that distinguish communities and link members of every community by social solidarity. They create boundaries that distinguish communities. Universal values constitute factors, which mediate in social exchange and social differentiation. These factors broaden the range of exchange transactions and status structures beyond boundaries of direct social interaction. Social values rendering power are factors that mediate in forming an organization and widen the scope of organized social control. Mutual norms and values in a community rendering authority or leadership constitute the way to confer power. Internalized and imposed by community members social norms, which result in submissiveness towards imperatives of authorized power, create links mediating in exercising power because they mediate between imperatives and imperatives enforcement. Opposition ideals are factors that mediate in social change and reorganization.

According to P. Blau, these four types of values reflect in four aspects of social structures. Particularistic values and processes of social integration are the basis of social solidarity and group loyalty. The range of these values extends from values reinforcing subgroup coherence and creating boundaries to values that include all members of community and link them in common solidarity. Universal values and attempts at diversifying reflect in systems of community distribution. Rendering values, which are the basis of a stable organization and centralized authority, reflect in political and administrative organization of every community. Fundamental issues underlying repeatable change patterns and reorganization in communities are opposition ideals and conflicts. Social solidarity is based on homogeneity of particular features in population, especially people attitudes, and on reciprocity

relations and social support exchange. Distributions systems need heterogeneity of other features in community what is connected with reciprocity transactions in an exchange system and with one-way transactions in a system of distinguished status. An organization needs heterogeneity of features and coordinating transactions by centralized management. Opposition ideals need a dichotomy of features in community and negative reciprocity in social interaction [Blau 2006, p. 94-106].

7. Loyalty

Loyalty is a very complex and difficult to identify psychological, sociological, philosophical, and economic category. In the literature, it is most frequently defined as "[...] the quality of being faithful in your support of somebody/something; a strong feeling that you want to be loyal to somebody/something[...]" [Oxford Advanced Learner's Dictionary 2000, p. 799] or "integrity, faithfulness, reliability in relations with people" [Uniwersalny słownik języka polskiego 2003, p. 669]. T.O. Jones and W.E. Sasser Jr. define loyalty as a sense of relation, attachment to an enterprise or affection for people working in an enterprise [Jones, Sasser Jr. 1995, p. 94]. Loyalty in network can be interpreted as identification with network, emotional attachment to network (acceptance of network values and goals, willingness to efforts for network, and desire for staying in network), sacrificing own interest for mutual network goals, honesty, integrity, acting in accordance with established norms, representing and realizing network goals, taking care of positive network image, interest in network development and strengthening network market position, not sharing knowledge beyond network boundaries, not abandoning network owing to bonds smarted in the form of sociopsychological contract despite more useful offers from another network.

External factors creating loyalty are mainly as follows: actions that facilitate the creation of the network of social contacts (social capital), the creation of possibilities of commitment in network, network honesty, and partnership. Important internal factors creating loyalty are as follows: a sense of identification with network, a sense of mutual trust, aiming to stabilization, which can be obtained by the balance between adaptation and creation, and perception of network honesty.

Two loyalty dimensions can be distinguished: an internal dimension and external one. An internal dimension of loyalty is understood as an attitude, bias or conviction. It constitutes an affective element of loyalty and creates apart from an emotional element (feelings) a cognitive element (conviction). According to K. Goldstein, attitudes mean feelings, moods, and another internal experience [Hall, Lindzey 1998, p. 235]. Furthermore, although attitudes are internal to a considerable degree they are generated by situations experienced by people. A central feature of an attitude is its evaluative character (each attitude includes the evaluation of an attitude object). Evaluation can be treated as cognitive (an emotionally neutral judgment), affective (feeling towards an attitude object) or behavioral (tendency

to behave in a special way towards an attitude) [Makin, Cooper, Cox 2000, p. 79; Robbins, Coulter 2005, p. 344]. P.G. Zimbardo and M.R. Leippe present the system of an attitude in which there are five categories of reactions to social objects: behavior, behavior intention (expectations or plans of behavior), cognitive elements (conviction, knowledge), affective reactions (emotions), and an attitude (evaluative bias based on cognitive elements, emotional reactions, intentions due to future, and behavior) [Zimbardo, Leippe 2004, p. 51-52]. C.A. O'Reilly appreciates an affective definition of an attitude and concludes that attitudes are mainly defined as positive or negative assessment concerning the aspects of own work environment [O'Reilly 1991, p. 427-458]. Behavior is another (external) dimension of loyalty. Loyalty in network can be regarded as directed behavior, lasting more time, being the function of psychological processes such as decision-making or judging given network and respecting alternative network proposals.

8. Trust

Trust is a basic parameter of enterprise's relational capital. Some theoreticians emphasize the importance of trust in relations based on cooperation (i.e.: [Dasgupta 1998; Ring, Van de Ven 1992; Sydow 1998]).

According to N. Luhmann, trust is necessary for contemporary society due to increasing complexity, intransparency, uncertainty, and the dominance of risk [Luhmann 1979]. A. Giddens refers to Luhmann's views considering trust as the element of the stage so-called "late modernity".. He emphasizes increasing complexity, uncertainty, and risk [Giddens 1990]. F. Fukuyama treats the trust category as a necessary factor of economic transactions [Fukuyama 1995]. According to P. Sztompka, trust and mistrust are peculiar resources and capital used in bets and in continual gambles of relations with other people [Sztompka 2007, p. 310]. P. Sztompka considers trust in categories of expectations of partners. He distinguishes effective, axiological, and protective expectations. Effective expectations are the least demanding – they concern instrumental properties of actions taken by partners (we expect that actions of other people will be regular, correct and expected). Due to axiological expectations, we expect that partners will act responsibly, fairly, and principally. Protective expectations deal with disinterested care for interests – this bet is the strongest one [Sztompka 2007, p. 311]. Additionally, P. Sztompka distinguishes following types of trust: personal trust (trust in particular people), positional trust (trust in particular social roles), commercial trust (trust in products), technological trust (trust in technical systems), institutional trust (trust in complex organizational existence), and system trust (trust in the whole social system and its participants) [Sztompka 2007, p. 312]. According to P. Sztompka, the criteria of trust are as follows [Sztompka 2007, p. 312-319]:

immanent criteria (directly concerning objects or people): reputation, achievements,

- indirect criteria: a structural (situational) context in which a trusted person/ organization acts,
- "trust impulse" criterion: personal trust or mistrust,
- cultural rules of trust,
- social organization transparency,
- stability of social order.

P. Sztompka regards that trust leads to increasing mobilization, activity, and innovation. Mistrust can also meet positive functions under the condition that mistrust is epistemologically established (similarly to trust). Mistrust in unreliable units is rational – it allows to protect against threats. Trust and mistrust become dysfunctional when they do not have epistemological establishment (for instance, trust in unreliable objects, unjustified mistrust). Trust is one of the most important catalysts for effective network functioning as it deepens relations between partnership organizations, improves agreement flexibility, and decreases and improves the processes of managing cooperation [Jennings et al. 2000, p. 25]. D. Harrison, L.L. Cummings, and N.L. Chervany described five categories of trust: calculations trust, personality trust (personality is a means of trust), institutional trust (it refers to the transparency of context in which the relation occurs), perceptual trust (it refers to the process of perceiving other units), and cumulative trust (it refers to the accumulation of knowledge about partners) [Harrison, Cummings, Chervany 1998, p. 473-4901, T.R. Tyler and R.M. Kramer describe trust in the category of taking risk. In their opinion trust is the state that is characterized by positive expectations of others' intention in the situation of taking risk [Kramer, Tyler 1996, p. 5-15]. M. Schulte, N.A. Cohen, and K.J. Klein, describing social network in the context of psychological safety, use the notion "assimilation" for describing informational and prescriptive processes by which units assimilate perception of trusted network participants (participants to whom units send positive bonds and reject the perception of network members who make troubles [Schulte, Cohen, Klein 2010, p. 4]. The authors formulated hypotheses that seemed to be possible of considering due to interorganizational network. The more perception of psychological safety in network by network participants is the more friendly and advisory bonds network participants will create, and vice versa. Network participants initiate positive/ advisory relations with members who express subjectively felt similarity to the perception of psychological safety in network.

9. Social capital

Social capital, the notion commonly used in the sociological and management literature, is most frequently defined as the ability to interpersonal cooperation inside groups and organizations in order to accomplish mutual interest [Fukuyama 1995]. Social capital is also perceived as a relationship between single persons – social network, reciprocity norms, and trust based on them [Putnam 1995]. It is

also described as a form of social structures in an enterprise reinforcing positive people behavior inside these structures [*Przedsiębiorczość...* 2001, p. 135]. Research conducted by P. Bullen and J. Onyx resulted in distinguishing six determinants of social capital: participation in network, reciprocity, trust, social norms, community, and proactivity [Bullen, Onyx 2000]. P. Bourdieu defined social capital as a sum of real and potential resources that are connected with owning a stable network of more or less institutionalized relations based on mutual familiarity and recognition [Bourdieu 1980, p. 2-3]. Social capital usage allows to create strong relations network enabling to have access to resources possessed by other units. The proposal of D. Lizak seems to be an accurate definition of social capital. He claims that organization's social capital is the network of mutual social relations based on trust, mutual care, and social norms serving economic development of organizations and advantages for their stakeholders [Lizak 2009, p. 13]. According to M. Porter, authors and researchers describing social capital agree that social capital means the ability to protect advantages of participating in social network and other social structures [Porter 1998, p. 1-24]. Social capital being the effect of local centrality and closure increases trust, effectiveness of organizational routines, and effectiveness of procedures. Social capital, which is created due to mediating in network, allows to explain innovation and change processes [Batorski, Zdziarski 2009, p. 175]. D. Easley and J. Kleinberg claim that social capital is the tension between closure and brokerage [Easley, Kleinberg 2010, p. 68]. P.S. Adler and S.W. Kwon present three social capital dimensions in the context of interorganizational context: a cognitive dimension (the ability of a given network to create mutual developing vision and to specify the vision as goals and tasks), a relational dimension (in the form of trust), mutual communication (based on buying, sharing, or imitating knowledge) [Adler, Kwon 2002, p. 17-24]. According to P. Kordel, [Kordel 2009, p. 46] the process of managing an interorganizational network can be described by the network competences of a given group of organizations as a product of two characteristics: knowledge management structure and social capital. This product defines the degree of maturity of interorganizational value creation processes.

10. Conclusion

Proposed factors contributing to ensure network coherence/cohesion constitute a deductive proposal based on the literature analysis and own considerations and research The proposal needs further research, both quantitative and qualitative. Thus, proposed factors influencing network cohesion/coherence should not be treated as a close in-depth set of independent variables or a closed list of factors ensuring network coherence/cohesion.

Literature

- Adler P.S., Kwon S.W., Social capital: prospects for a new concept, "Academy of Management Review" 2002, no. 27.
- Batorski D., Zdziarski M, *Analiza sieciowa i jej zastosowania w badaniach organizacji i zarządzania*, "Problemy zarządzania" 2009, Vol. 7, no. 4(26).
- Blau P.M., Wymiana społeczna, [in:] Współczesne teorie socjologiczne, eds. A. Jasińska-Kania, L.M. Nijakowski, J. Szacki, M. Ziółkowski, Wydawnictwo Naukowe SCHOLAR, Warszawa 2006.
- Bourdieu P., *La capital social: notes provisoires*, "Actes de la Recherche en Sciences Sociales" 1980, no. 31.
- Bullen P., Onyx J., *Measuring social capital in five communities in NSW*, "Journal of Applied Behavioural Science" 2000, no. 1.
- Coleman J.S., Social capital in the creation of human capital, "American. Journal of Sociology" 1988, vol. 94.
- Cotton J.L., Employee Involvement, Sage, Newbury Park 1993.
- Czakon W., Istota relacji sieciowych przedsiębiorstwa, "Przegląd Organizacji" 2005, no. 9.
- Dasgupta P., Trust as Commodity, [in:] Trust: Making and Breaking Cooperate Relations, ed. D. Gambetta, Blackwell, Oxford 1998.
- Easley D., Kleinberg J., *Networks, Crowds, and Markets: Reasoning about a Highly Connected World*, Cambridge University Press, Cambridge 2010.
- Fukuyama F., Trust: The Social Virtues and the Creation of Prosperity, Free Press, New York 1995.
- Giddens A., The Consequences of Modernity, Polity Press, Cambridge 1990.
- Granovetter M.S., The strength of weak ties, "American Journal of Sociology" 1973, vol. 78(6).
- Gulski B., *Struktury sieciowe we wdrażaniu strategii modularnych*, "Organizacja i Zarządzanie" 2008, no 2
- Hall C.S., Lindzey G., Teorie osobowości, PWN, Warszawa 1998.
- Harrison D., Cummings N.L., Chervany N.L., *Initial trust formation in new organizational relation-ship*, "Academy of Management Review" 1998, no. 3.
- Homans G.C., Social Behavior: Its Elementary Forms, Harcourt, Brace & World, New York 1961.
- Jennings D.F., Artz K., Gillin L.M., Christodouloy Ch., *Determinants of trust in global strategic alliances: AMRAD and the Australian biomedical*, "Competitiveness Review" 2000, no. 10/1.
- Jones T.O., Sasser W.E., Jr., Why satisfied customers defect, "Harvard Business Review" 1995, no. 9-10.
- Kordel P., Koncepcja zarządzania sieciami międzyorganizacyjnymi w perspektywie konstruktywistycznej, [in:] Komputerowo zintegrowane zarządzanie, ed. R. Knosala, Oficyna Wydawnictwa Polskiego Towarzystwa Zarządzania Produkcją, Opole 2009.
- Kramer T.R., Tyler R.M., Trust in Organization, Sage, Thousand Oaks 1996.
- Lazarsferd P.F., Merton R.K., Friendship as a social process: a substantive and methodological analysis, [in:] Freedom and Control in Modern Society, ed. M. Berger, Van Nostrand, New York 1954.
- Lizak D., Zasobowy charakter kapitału społecznego organizacji, "Przeglad Organizacji" 2009, no. 2.
- Lovaglia M.J., Sieciowa teoria wymiany, [in:] Współczesne teorie socjologiczne, eds. A. Jasińska-Kania, L.M. Nijakowski, J. Szacki, M. Ziółkowski, Wydawnictwo Naukowe SCHOLAR, Warszawa 2006.
- Luhmann N., Trust and Power, J. Wiley, New York 1979.
- Łobos K., *Organizacje sieciowe*, [in:] *Zarządzanie przedsiębiorstwem w turbulentnym otoczeniu*, ed. R. Krupski, PWE, Warszawa 2005.
- Makin P., Cooper C., Cox C., Organizacje a kontrakt psychologiczny. Zarządzanie ludźmi w pracy, PWN, Warszawa 2000.

- Malara Z., Przedsiębiorstwo w globalnej gospodarce. Wyzwania współczesności, PWN, Warszawa 2006.
- Marsden, P.V., Campbell K.E., Measuring tie strength, "Social Forces" 1984, vol. 63.
- McFadyen M.A., Semadeni M., Cannella A.A., *Value of strong ties to disconnected others: examining knowledge creation in biomedicine*, "Organization Science" 2009, Vol. 20, no. 3.
- McPherson M., Smith-Lovin L., Cook J.M., *Birds of a feather: homophily in social networks*, "Annual Review of Sociology" 2001, Vol. 27.
- Menon T., Philips K.W., Getting even or being at odds? Cohesion in even- and odd sized small groups, "Organizational Science" 2010, articles in advance.
- Meyer J.P., Allen N.J., Smith C.A., Commitment to organizations and occupations: extension and test of a three component conceptualization, "Journal of Applied Psychology" 1993, no. 78.
- O'Reilly C.A., Organizational behavior: where we've been, where we're going, "Annual Review of Psychology" 1991, no. 42.
- Oxford Advanced Learner's Dictionary, Oxford University Press, Oxford 2000.
- Porter A., Social capital: Its origins and applications in modern sociology. "Annual Review of Sociology", no. 24.
- Porter L., Steers R., Mowday R., Boulian P., Organisational commitment, job satisfaction and turnover amongst psychiatric technicians, "Journal of Applied Psychology" 1974, no. 59.
- Przedsiębiorczość i kapitał intelektualny, eds. M. Bratnicki, J. Strużyna, Wydawnictwo Akademii Ekonomicznej, Katowice 2001.
- Putnam R.D., *Bowling Alone: America's declining social capital*, "Journal of Democracy" 1995, no. 6. Ring P.S., Van de Van A.H., *Structuring Cooperative Relationships between Organizations*, "Strategic Management Journal" 1992, Vol. 13, no. 7.
- Robbins S.P., Coulter M., Management, Prentice Hall, Upper Saddle River 2005.
- Salancik G.R., Commitment and the Control of Organisational Behaviour and Belief, [in:] New Directions in Organisational Behaviour, eds. B.M. Staw, G.R. Salancik, Clair Press, Chicago 1997.
- Schulte M. Cohen N.A., Klein K.J., *The coevolution of network ties and perceptions of team psychological safety*, "Organization Science" 2010, articles in advance.
- Semlinger K., Cooperation and competition in network governance: regional networks in a globalised economy, "Enterpreneurship Regional Development" 2008, Vol. 20, no. 6.
- Stankiewicz-Mróz A., Kształt kontraktu psychologicznego w warunkach recesyjnego rynku pracy, [in:], Sukces w zarządzaniu kadrami. Perspektywa globalna i lokalna, ed. Listwan T., Akademia Ekonomiczna, Wrocław 2004.
- Stępka P., Subda K., Wykorzystanie analizy sieci społecznych (SNA) do budowy organizacji opartej na wiedzy, "E-mentor" 2009, nr 1(28).
- Strategor, Zarządzanie firmą. Strategie. Struktury. Decyzje. Tożsamość, PWE, Warszawa 2001.
- Sydow J., Understanding the Constitution of Interorganizational Trust, [in:] Trust within and between organizations. Conceptual issues and empirical applications, eds. Ch. Lane, R. Bachmann, Oxford University Press, Oxford 1998.
- Sztompka P., Socjologia. Analiza społeczeństwa, Znak, Kraków 2007.
- Uniwersalny słownik języka polskiego, ed. S. Dubisz, PWN, Warszawa 2003.
- Wellman B., Structural Analysis: from Method and Metaphor to Theory and Substance. [in:] Social Structures: A Network Approach, eds. B. Wellman, S.D. Berkowitz, , Cambridge University Press, Cambridge 1988.
- Zimbardo P.G., Leippe M.R., *Psychologia zmiany postawy i wpływu społecznego*, Zysk i S-ka, Poznań 2001.

SPÓJNOŚĆ SIECI I JEJ DETERMINANTY

Streszczenie: W artykule zaprezentowano rozważania dotyczące spójności sieci i dokonano próby określenia jej determinant. W literaturze przedmiotu występuje luka poznawcza i badawcza w odniesieniu do spójności jako wymiaru sieci i czynników ją determinujących. Artykuł stanowi przyczynek do pogłębienia wiedzy w tym zakresie oraz wskazuje potrzebę badań w poszukiwaniu relacji (i określeniu ich charakteru) pomiędzy czynnikami wpływającymi na poziom spójności sieci.

Slowa kluczowe: spójność, sieć, determinanty spójności sieci.