



Anna Sankowska

Institute of Production Systems Organization
Faculty of Production
Warsaw University of Technology

**Trust, knowledge creation and mediating effects
of knowledge transfer processes**

Abstract

This paper investigates how organizational trust contributes to knowledge transfer processes and knowledge creation both directly and indirectly. The mediation analyses were used. The findings using cross-sectional data from Polish companies suggest a new way of thinking in respect of how crucial is trust to creation of knowledge unconnected to organizational memory.

Keywords: trust, knowledge transfer, knowledge diffusion, knowledge absorption, knowledge creation.

JEL Classification: L16, M21, L1.

Introduction

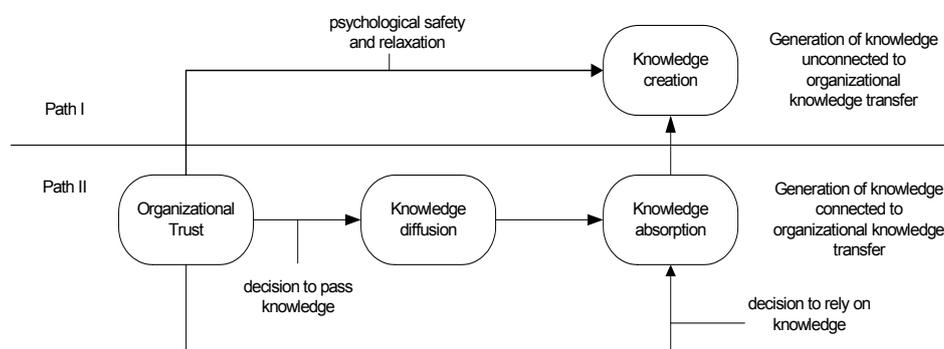
Early research on trust pointed out the overall importance of trust in organization [Likert 1967; McGregor 1967; Argyris 1973] Recently, researchers has related trust to knowledge. Prominent literature on trust has suggested that trust is a critical feature of knowledge-intensive environment [Adler 2001]. However, most of scholars works focused on knowledge transfer connections with trust. There is less theoretical interest in the linkage between trust and knowledge creation, and moreover in explanations of it. What is interesting is not just that there is a relationship between organizational trust and knowledge creation, but how actually it works. The aim of this paper is to address this research gap by explaining how organizational trust translates into knowledge creation; what processes are going on that translate trust into actual knowledge creation. In the

ongoing debate on trust in literature it is still unresolved, which processes account for knowledge creation. As trust and knowledge creation are increasingly important for organizational success, it would be valuable to understand better the link between them. Seeing that, in the paper it is proposed to take into account knowledge transfer processes referring to knowledge absorption and knowledge diffusion to explain it. A rationale is as follows. If organizational trust is high, it may encourage members to its sharing and integrating into one's mental model, which in turn can underpin new knowledge generation rooted in organizational accumulated knowledge. At the same time trust can directly induce knowledge generation not derived from the organizational memory. However, it is still interesting to answer whether the direct or indirect impact of organizational trust on knowledge creation is stronger. This corresponds to the discussion about two different modes of learning through exploration and exploitation [March 1991], while exploitation is concerned with organizational transferred knowledge, exploration is linked with unconnected knowledge creation, and it implies novel, disruptive innovations. The paper delineates the arguments on which one of them, trust matters the most.

In terms of links of organizational trust with knowledge we can identify two different strands in prior literature. The former one, dominating the aforementioned discussion, highlights the fostering role of trust in knowledge sharing and/or transfer. The later one hinges on the assumption that trust leads to knowledge creation and it has been significantly overshadowed by the former discussion. The author suggests that those two modes of the impact on trust on organizational knowledge can happen simultaneously and moreover, taken together can explain better the effect of organizational trust on knowledge creation. It is suggested to distinguish two paths of the effect of trust on knowledge creation. One referring to the first line of the research strand encompassing how organizational trust directly affects knowledge creation and the other one referring to the second line of research unveiling the indirect mechanism of the trust impact on knowledge creation through the knowledge transfer processes such as knowledge diffusion and knowledge absorption. While in the former path there is creation of novel knowledge unrooted in the organizational memory (unconnected knowledge), in the later the new knowledge is a result of combing shared and absorbed knowledge with knowledge that resides in individuals minds (connected knowledge). A central argument in theorizing on a trust influence on knowledge transfer processes is based on the recognition that direction of knowledge transfer matters. At one point individuals make decision whether they want to convey knowledge to others and at the other hand they would adapt provided knowledge to their use. Certain levels of trust motivate to do so.

This paper aims at deepening the understanding of connections between organizational trust, knowledge transfer processes (knowledge diffusion, knowledge absorption) and knowledge creation rather than focusing whether there are interdependencies between organizational trust, knowledge transfer and knowledge creation. The conceptual model is presented in Figure 1. The following sections will provide reasoning for the proposed model together with hypotheses development based on the reviewed literature. Then, the empirical study is presented together with findings. The results and study limitations are discussed and conclusions are drawn.

Figure 1. Conceptual model



1. Conceptual framework and hypotheses development

1.1. Trust and knowledge creation

Trust is believed to foster knowledge creation, which entails the development of ideas or completely new thoughts. Knowledge creation tied to organization's capability to exchange and combine knowledge [Wang, Su, Yang 2011] emerges when there is willingness to be vulnerable to the actions of other parties [Mayer, Davis, Schoorman 1995] and to engage in risk-taking behaviors [Serva, Fuller, Mayer 2005] based on positive projections and assessment of ability, benevolence and integrity [Mayer, Davis, Schoorman 1995; Schoorman, Mayer, Davis 1996]. These actually denote the notion of trust. However, only few studies have empirically acknowledged that trust ameliorates knowledge creation [Niu 2010; Chung & Jackson 2011]. One of the theoretical models of social capital predicts a positive impact of trust on knowledge combination (or widely resources combination) was introduced by Nahapiet and Ghoshal [1998]. Tsai & Ghoshal tested and found this theorized association [1998].

The another other mechanism that explains why trust might actually predict knowledge creation is grounded on the expectation that trust reduces the need for monitoring [McAllister 1995] thus builds a stage for creativity. Creativity is a risky task, which requires a feeling of safety [Edmondson 1999] and relaxation [Li 2012] encapsulated with trust. In a safe and relaxed atmosphere, the people tend to exert more efforts for which they actually take pleasure as it were played [Li 2012; Mollering 2012].

The above reasons explain why organizational trust can be seen as a facilitator of knowledge creation and exploration. However, the advocated direct link is rather based on freeing people owns creativity and knowledge, rather than on applying the integrated one through knowledge transfer, which serves to the improvement, so exploitation. The latter contention will be reasoned in the next section. Now, it is postulated the following.

Hypothesis H 1: Trust has a positive effect on knowledge creation.

1.2. Knowledge transfer processes as mediating mechanisms

A lot of prior research discussing implication of trust on knowledge is devoted to knowledge sharing or to knowledge transfer [Zand 1972; Adler 2001; Levin & Cross 2004; Chowdhury 2005; Mooradian, Renzl, & Matzler 2006; Wang, Ashleigh, & Meyer 2006; Cheng, Hailin, & Hongming 2008; Ling, San, & Hock 2009; Yanfei & Yu 2009; Ko 2010; Lee, Gillespie et al. 2010; Yusof & Ismail 2010]. Undoubtedly, trust facilitates knowledge exchange and disclosure of sensitive information that is why it is viewed as a critical factor or a prerequisite in the context of knowledge sharing. A broad consensus has emerged in literature with this respect. It has been supported by numerous studies to a large extent [Holste & Fields 2010; Sankowska 2012, p. 6]. But some clarification is still required, how this impact actually reveals. The starting point is to precise what does knowledge transfer stand for? It is a some form of exchange of knowledge between a knowledge provider and knowledge receiver [Ko, Kirsch et al. 2005]. Another definition states that it is a process when knowledge is transmitted and absorbed by a user [Wei-he & Qiu-yan 2006]. In this respect, knowledge transfer can be boiled down to two processes, namely knowledge diffusion (appearing within organization between individuals) and knowledge absorption. Put differently, knowledge transfer is about knowledge sharing and use [Holste & Fields 2010]. So, for successful knowledge transfer in organizational settings the knowledge must be disseminated between individuals, but also absorbed by them, as well as integrated with their existing knowledge framework. This re-

lates back to the development of meaning [Nonaka & Takeuchi 1995] ameliorated with socialization and integration of transmitted knowledge with one's mental model. As Nonaka and Takeuchi [1995] contends pure mere transfer of information in a systematic formal way often makes little or any effect if it is linked to emotions and specific context. Having absorbed knowledge one can access to it as a foundation of new knowledge generation. Trust supports those knowledge transfer processes within an organization for several reasons. One reason is that trust predicts risk taking behaviors [Serva, Fuller, & Mayer 2005] as it mitigates the perceived risk of sharing sensitive knowledge that might be exploited opportunistically against a knowledge provider. On the other hand, with trust receipt of knowledge and its absorption incur less tension and risk. In addition, knowledge is perceived more valuable [Levin & Cross 2004; He, Fang, & Wei 2008]. In line with this view is the empirical investigation supporting the connection between trust in the community of knowledge management system users (KMS) and perceived usefulness of the KMS [He, Fang, & Wei 2008]. Another recent study by Swift & Hawing supports the advocated herein logic of twofold levels of trust's influence. They have reported a positive correlation of an affect-based trust on knowledge sharing as well as a positive correlation of a cognition-based trust on organizational learning (a notion close to knowledge absorption), which is about the way of knowledge is interpreted and assimilated for future applications [2012].

Both an ability to pass and an ability to assimilate knowledge are important to knowledge creation processes. However, it is still unknown what is their importance in comparison to knowledge creation based on organizational memory. Although in literature it is acknowledged that knowledge transfer processes are important for knowledge creation, however, the actual impact of knowledge transfer processes is unknown. As previously stated, solely knowledge dissemination will unlikely result in new knowledge creation. It must be previously assimilated. Thus, it can be expected that knowledge creation is preceded by knowledge absorption.

Based on above explained reasoning, there is assumed the following:

Hypothesis 2: Knowledge diffusion and knowledge absorption sequentially mediate the relationship between trust and knowledge creation.

2. Method

2.1. Sample and procedure

Data gathering administered via a phone survey relied on a close-ended questionnaire directed to the managers from 202 Polish enterprises listed on the Warsaw Stock Exchange in 2010. Data were collected via CATI (Computer Assisted Telephone Interviewing) by the professional company CEM Market and Public Opinion Research Institute located in Cracow, which complies with high ethical standards of research established by European Society for Opinion and Marketing Research (ESOMAR). The respondents were ensured about confidentiality of their individual responses and that only aggregate-level data would be displayed.

2.2. Measures

Organizational trust. To measure organizational trust three items were used: 1) expressing readiness to trust adapted from Hacker and Willard [2002] – “The organization operates on the assumption of trust even in new situations.”, 2) referred to organizational trust as a climate-based phenomenon adapted from Glińska-Neweś [2007] – “Within the organization there is a climate of trust”, 3) reflecting trustworthiness as a foundation of trust – “The organization is trustworthy”. The scale ranged from (1) “completely disagree” to (7) “completely agree”. The seven-point scale was used in case of other instruments mentioned in the study. The scale achieved very high internal inter-item consistency (Cronbach’s alpha $\alpha = 0.923$) above the cut-off point of 0.70 [Nunnally 1978], which is a very satisfactory level.

Knowledge diffusion. Three items the most highly loading on knowledge diffusion from the scale developed by Wei-he & Qiu-yan were employed to capture the construct [2006].

Knowledge absorption. Analogously, following the three most highly loading items on knowledge absorption developed by Wei-he & Qui-yian [2006], the construct of knowledge absorption was measured.

Knowledge creation. Socialization, combination, internalization and externalization were assessed with three highly loading items from the scale developed by Wei-he & Qui-yian [2006] correspondingly. These items capture the conceptualization of knowledge creation introduced by Nonaka & Takeuchi [1995].

3. Results

For the variables of interest there were used summated scales. Table 1 depicts the means, standard deviations and correlations of the measures together with scale reliabilities. As Tables 1 shows, organizational trust relatively highly and significantly correlates with knowledge creation ($r = 0.74$, $p < 0.001$), which support Hypothesis 1 predicting a positive relationship between organizational trust and knowledge creation.

Table 1. Means, standard deviations and correlations for the variables along with Cronbach's alphas

Variables	Mean	s.d.	No. of items	1	2	3	4
1. Organizational trust	6.19	0.86	3	0.92)			
2. Knowledge diffusion	3.06	0.46	3	0.70	0.79)		
3. Knowledge absorption	4.38	0.99	3	0.62	0.63	0.69)	
4. Knowledge creation	1.86	0.98	2	0.74	0.71	0.62	0.91)

Note:

All correlations are significant at the 0.001 level (two-tailed tests).

Scale reliabilities are on the diagonal in parentheses.

With respect to pathways linking trust with knowledge creation illustrated in Figure 1 linked to Hypothesis 2, the mediation analyses were performed to test: (i) whether knowledge absorption mediates the relationship between trust and knowledge creation and (ii) whether knowledge diffusion mediates the relationship between trust and knowledge absorption. The mediating effect is presented when the third variable intervenes between the other related constructs [Baron & Kenny 1986]. To test the mediating hypothesis, Baron and Kenny's [1986] procedure was followed. The results are presented in Figure 2 and 3.

Figure 2. Knowledge absorption as a mediator of the relationship between organizational trust

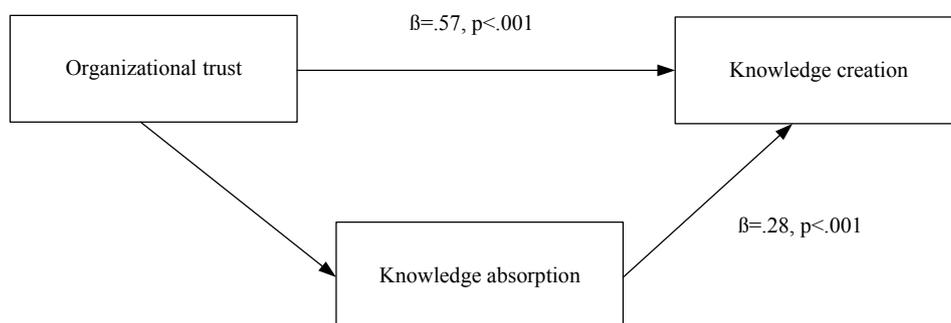
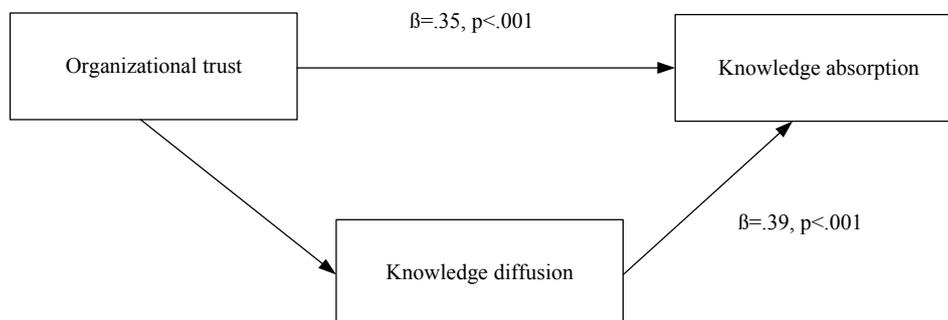


Figure 3. Knowledge diffusion as a mediator between organizational trust and knowledge absorption



Firstly, it was checked whether knowledge absorption mediates the relationship between trust and knowledge creation. Mediation requires all correlations between variables of interest to be significant. There was established a significant relationship between all three variables. From the correlations analyses we can see that organizational trust was significantly related to knowledge creation ($r = 0.74$, $p < 0.001$) ensuring that the direct, unmediated relationship was significant. Organizational trust was also significantly related to the knowledge absorption mediator ($r = 0.62$, $p < 0.001$). Finally, the mediator was significantly related to the outcome variable, namely the knowledge creation ($r = 0.62$, $p < 0.001$). Thus, the preconditions required to test mediation were established. Then, it was assessed if adding the intervening variable would change substantially the direct effect of organizational trust on knowledge creation. As we can see in Figure 2, although the direct effect did decrease, it is still significant and it represents a substantial portion (0.57) of the total effect (0.74). This denotes a partial mediation. The indirect effect of magnitude 0.17 (organizational trust \rightarrow knowledge absorption \rightarrow knowledge creation) represents the mediating effect of construct knowledge absorption on the relationship between organizational trust and knowledge creation. As such the knowledge absorption mediating effect clarifies how much of knowledge creation is derived from absorbed knowledge due to organizational trust. This indirect path is weaker than the direct path linking organizational trust with knowledge creation. The model with entered knowledge absorption explained only 5% more of the variance in knowledge creation (adjusted $R^2 = 0.60$) compared to the explained variance when organizational trust was included alone (adjusted $R^2 = 0.55$).

Secondly, it was examined whether knowledge diffusion is the mediator of relationship between trust and knowledge absorption. As Table 1 presents the direct relationship between organizational trust and knowledge absorption exists.

The predictor of organizational trust is related to the mediator: knowledge diffusion. Moreover, the mediator does have relationship with the outcome: knowledge absorption. When both variables organizational trust and knowledge diffusion were added to the regression equation, the relationship between organizational trust and knowledge absorption was reduced but remained significant (Figure 3). Thus, a partial mediation is supported. The indirect and direct effects are of similar magnitude ($\beta = 0.35$ compared to $\beta = 0.39$).

4. Discussion

The findings provide sound support for the links between organizational trust and knowledge creation. What is interesting it is not just that relationship between organizational trust and knowledge creation was supported, but actually how it comes out.

The mediating variables of knowledge diffusion and knowledge absorption facilitate the relationship between organizational trust and knowledge creation. The increase in organizational trust is the cause of knowledge creation growth. The direct effect is of an utmost importance. But the relationship of trust to knowledge creation is totally completed if knowledge absorption and knowledge diffusion intervene. Organizational trust fosters knowledge diffusion within an organization. However, sole diffusion of knowledge will not lead to profound knowledge creation. To be productively used for ideas generation, knowledge must be framed into individuals mental models. In order to achieve that, the diffused knowledge should be both seen as reliable (trustworthy), but also the receiver should perceive its utility in order to make effort to assimilate it. Organizational trust creates the feeling of reliability of transferred knowledge, which in turn creates positive attitudes favorable to its absorption. However, the organizational knowledge can be still created without basing on organizational memory, which is stimulated by trust even more than incremental knowledge creation. It suggests that organizational trust is especially advised for novel knowledge and innovations lying outside the current organizational memory. That supports a theory indicating the role of trust in enriching creativity and shifts our attention to a fostering role of trust in knowledge creation.

5. Limitations and future directions

Several limitations of study must be noted. All data were collected as a subjective judgment of a key informant representing a particular firm. One limitation of the study arises from cross-sectional data nature, which does not enable

to evaluate causality. This suggests extending future research by incorporating a longitudinal design.

Another limitation of the examination lies in the fact that study was limited to companies listed on the Warsaw Stock Exchange. Future research could examine the variables of interest in companies from other markets. Thus, more empirical studies would be welcomed.

A final note is to suggest examination of different types of trust (based on emotions and cognition) on knowledge transfer and knowledge creation in one model. It would deeper enhance the understanding of the model proposed in the the/this paper.

6. Contribution and implications

It was found that most of the total effect of organizational trust on knowledge creation comes from the direct effect of trust as well as from the indirect impact exerted through knowledge transfer processes. It may suggest that, knowledge creation requires organizational trust. Given the above, the managers should pay attention to its reorganization at different levels. First of all, novel knowledge cannot be created without trust embodied in organizational culture. Moreover, when aiming at incremental changes based on organizational memory managers should pay attention to trust at two different stages of knowledge transfer, when it is diffuses inside an organization and when it absorbed by individuals for further applications. Sole knowledge diffusion will not enhance knowledge creation in a meaningful way. That supports the practical observation in companies, where implementation of knowledge management systems aimed at making knowledge available to organizational members without trust, do not bring foreseen results.

References

- Adler P.S. (2001): *Market, Hierarchy and Trust: The Knowledge Economy and the Future of Capitalism.* "Organization Science", Vol. 12(2), pp. 241-246.
- Argyris C. (1973): *On Organization of the Future.* Sage, Beverly Hills.
- Baron R.M. & Kenny D.A. (1986): *The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations.* "Journal of Personality and Social Psychology", Vol. 51(6), pp. 1173-1182.
- Cheng W., Hailin L., Hongming X. (2008): *Does Knowledge Sharing Mediate the Relationship between Trust and Firm Performance?* In: *International Symposiums on Information Processing International Pacific Workshop on Web Mining and Web-Based Application.* F. Yu and Q. Luo (eds.). IEEE Computer Society, Washington, DC, pp. 449-453.

- Chowdhury S. (2005): *The Role of Affect- and Cognition-Based Trust in Complex Knowledge Sharing*. "Journal of Managerial Issues", Vol. 17(3), pp. 310-326.
- Chung Y. & Jackson S.E. (2011): *Co-Worker Trust and Knowledge Creation: A Multi-level Analysis*. "Journal of Trust Research", Vol. 1(1), pp. 65-83.
- Edmondson A. (1999): *Psychological Safety and Learning Behavior in Work Teams*. "Psychological Safety and Learning Behavior in Work Teams", Vol. 44(2), pp. 350-383.
- Glińska-Noweś A. (2007): *Kulturowe uwarunkowania zarządzania wiedzą w przedsiębiorstwie*. Wydawnictwo „Dom Organizatora”, Toruń.
- Hacker S.K. & Willard M.L. (2002): *The Trust Imperative: Performance Improvement through Productive Relationships*. ASQ Quality Press, Milwaukee.
- He W., Fang Y., Wei K.-K. (2008): *The Role of Trust in Promoting Organizational Knowledge Seeking Using Knowledge Management Systems: An Empirical Investigation*. "Journal of the American Society for Information Science and Technology", Vol. 60(3), pp. 526-537.
- Holste J.S. & Fields D. (2010): *Trust and Tacit Knowledge Sharing and Use*. "Journal of Knowledge Management", Vol. 14(1), pp. 128-140.
- Ko D.-G. (2010): *Consultant Competence Trust Doesn't Pay off, but Benevolent Trust Does! Managing Knowledge with Care*. "Journal of Knowledge Management", Vol. 14(2), pp. 202-213.
- Ko D.-G., Kirsch L.J. et al. (2005): *Antecedents of Knowledge Transfer from Consultants to Clients in Enterprise Systems Implementations*. "MIS Quarterly", Vol. 29(1), pp. 59-85.
- Lee P., Gillespie N. et al. (2010): *Leadership and Trust: Their Effect on Knowledge Sharing and Team Performance*. "Management Learning", No. 41(4), pp. 473-491.
- Levin D.Z. & Cross R. (2004): *The Strength of Weak Ties You Can Trust: The Mediating Role of Trust in Effective Knowledge Transfer*. "Management Science", Vol. 50(11), pp. 1477-1490.
- Li P.P. (2012): *Exploring the Unique Roles of Trust and Play in Private Creativity: From the Complexity-Ambiguity-Metaphor Link to the Trust-Play-Creativity Link*. "Journal of Trust Research", Vol. 2(1), pp. 71-97.
- Likert, R. (1967): *The Human Organization: Its Management and Value*. McGraw-Hill, New York.
- Ling T.N., San L.Y., Hock N.T. (2009): *Trust: Facilitator of Knowledge-Sharing Culture*. "Communication of the IBIMA", Vol. 7, pp. 137-142.
- March J.G. (1991): *Exploration and Exploitation in Organizational Learning*. "Organization Science", Vol. 2(1), pp. 71-87.
- Mayer R.C., Davis J.H., Schoorman F.D. (1995): *An Integrative Model of Organizational Trust*. "Academy of Management Journal", Vol. 20(3), pp. 709-734.
- McAllister D.J. (1995): *Affect- and Cognition-Based Trust as Foundations for Interpersonal Cooperation in Organizations*. "Academy of Management Journal", Vol. 38(1), pp. 24-59.

- McGregor D. (1967): *The Professional Manager*. McGraw-Hill, New York.
- Mollering G. (2012): *Trusting in Art: Calling for Empirical Trust Research in Highly Creative Contexts*. "Journal of Trust Research", Vol. 2(2), pp. 203-210.
- Mooradian T., Renzl B., Matzler K. (2006): *Who Trusts? Personality, Trust and Knowledge Sharing*. "Management Learning", Vol. 37(4), pp. 523-540.
- Nahapiet J. & Ghoshal S. (1998): *Social Capital, Intellectual Capital, and the Organizational Advantage*. "Academy of Management Review", Vol. 23(2), pp. 242-266.
- Niu K.-H. (2010): *Organizational Trust and Knowledge Obtaining in Industrial Clusters*. "Journal of Knowledge Management", Vol. 14(1), pp. 141-155.
- Nonaka I. & Takeuchi H. (1995): *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York.
- Nunnally J.C. (1978): *Psychometric Theory*. McGraw-Hill, New York.
- Sankowska A. (2012): *Relationships between Organizational Trust, Knowledge Transfer, Knowledge Creation, and Firm's Innovativeness*. "The Learning Organization", Vol. 20(1).
- Schoorman F.D., Mayer R.C., Davis J.H. (1996): *Organizational Trust: Philosophical Perspectives and Conceptual Definitions*. "Academy of Management Review", Vol. 21(2), pp. 337-340.
- Serva M.A., Fuller M.A., Mayer R.C. (2005): *The Reciprocal Nature of Trust: A Longitudinal Study of Interacting Teams*. "Journal of Organizational Behavior", Vol. 26, pp. 625-648.
- Swift P.E. & Hwang A. (2012): *The Impact of Affective and Cognitive Trust on Knowledge Sharing and Organizational Learning*. "The Learning Organization", Vol. 20(1), pp. 20-37.
- Tsai W. & Ghoshal S. (1998): *Social Capital and Value Creation: The Role of Intrafirm Networks*. "The Academy of Management Journal", Vol. 41(4), pp. 464-6476.
- Wang D., Su Z., Yang D. (2011): *Organizational Culture and Knowledge Creation Capability*. "Journal of Knowledge Management", Vol. 15(3), pp. 363-373.
- Wang J.K., Ashleigh M., Meyer E. (2006): *Knowledge Sharing and Team Trustworthiness: It's All About Social Ties!* "Knowledge Management Research & Practice", Vol. 4, pp. 175-186.
- Wei-he H. & Qiu-yan Z. (2006): *Development of an Instrument to Measure Knowledge Management Processes*. Paper presented at the ICMSE'06 2006 International Conference on Management Science and Engineering, Lille.
- Yanfei W. & Yu Z. (2009): *The Relationships among Organizational Socialization, Trust, Knowledge Sharing and Creative Behavior*. Proceedings of 13th International Conference on Management and Service Science MASS'09, Lille.
- Yusof Z.M. & Ismail M.B. (2010): *The Impact of Awareness, Trust and Personality on Knowledge Sharing Practice*. "Information Retrieval & Knowledge Management", pp. 321-325.
- Zand D. (1972): *Trust and Managerial Problem Solving*. "Administrative Science Quarterly", Vol. 17(2), pp. 229-239.