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# Knowledge Management in Organizations. The Case of Business Clusters

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## Abstract

**Purpose:** The purpose of this article is to characterize the process of knowledge management in business clusters in terms of the benefits for the cluster members. The paper examines which mechanisms within the clusters promote knowledge creation between companies and other institutions.

**Methodology:** The literature review is based on databases of books and scientific articles, such as EBSCO, Elsevier, JSTOR, Springer, and the Oxford Library and Kingston University London Library. The analysis of the literature is focused around the concepts of business clusters, knowledge management in organizations, knowledge management in clusters.

**Findings:** The literature presented in this paper shows that network forms of organization such as clusters are conducive to inter-firm knowledge and skill development. Clusters as a type of network turn out to be a highly structured model of knowledge development, transfer and diffusion, produced by the interaction of social and economic relations within cluster institutions.

**Research implications:** The article constitutes a combination of two theoretical aspects – knowledge management and business clusters. The theoretical conclusions of the literature review, mostly foreign literature, provide a basis for research in that area.

**Practical implications:** In the Polish literature on the subject the aspect of knowledge management in business clusters has not yet been discussed. The conclusions of the presented literature analysis provide a basis for research and the development of practical recommendations for cluster managers. Knowledge-based clusters can serve as an example for developing clusters in the world. They are often clustered around research centers, making it possible to improve the exchange of knowledge between the cluster members and also providing the opportunity to better connect the world of science and business.

**Originality:** The author has presented a unique mix of theory, knowledge management and business clusters and has demonstrated that one of the benefits of business clusters is their ability to generate knowledge by combining existing information and data from internal databases of businesses within clusters with the influx of new information. Formal contacts between the employees of the cooperating institutions provide general knowledge and best practices based on collective knowledge. While informal contacts are important channels for the transfer of tacit knowledge, the so-called operational know-how.

**Keywords:** clusters, knowledge management, knowledge flows in clusters

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## | Introduction

In the era of globalization one can observe the actions of mainly small and medium-sized businesses towards creating cooperation and collaboration networks within the frameworks of cooperative groups, clusters, networks and such. Organizations operating in both developed and developing countries are gradually changing their attitude and accepting solutions based on mutual assistance and collaboration. Companies agglomerate and join forces in order to exploit synergies generated by collaborative relationships with other companies and related partner institutions, such as universities, research institutes, institutions from the business environment. The ability of companies to implement rapid organizational and technological changes is becoming extremely important, and knowledge as well as information are becoming important factors in the competitiveness of companies. In the era of modern economies it is the effective sharing of information that is one of the most important goals for businesses and organizations (Carayannis and Wang, 2008).

Nowadays clusters are starting to be perceived as a way of functioning for businesses, which allows both acquiring knowledge, developing it, and – as a result of collaboration with partners – creating new knowledge.

## | The Characteristics of Clusters as a Modern Form of Cooperation Between Enterprises

According to the concept of creating clusters the economy does not only consist of entities and institutions, but also the synergies that arise as a result of their mutual cooperation. As defined by the precursor of the clusters theory, M.E. Porter, a cluster is a "geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate" (Porter, 2001, p. 246).

The term cluster refers to a geographical area, which brings together a number of cooperating companies, organizations (including the business environment) and scientific institutions (OECD, 1999). Businesses within a cluster are linked to the proximal and distal environment with ties of a vertical (suppliers and customers cooperate in the value chain) as well as a horizontal nature (joint customers, technologies, distribution channels).

The term "cluster" includes concepts such as *cooperation*, *trust* and *dissemination of knowledge* in its definition. In well-developed clusters organizations often have access to external sources of knowledge and partners willing to cooperate in the field of research and development within the network to which they belong (Carayannis and Wang, 2008).

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The definition of D. Jacobs and A.P. De Man can confirm this, according to which clusters can be defined as (Jacobs and Man, 1996):

– groups of companies from related industrial sectors, characterized by geographical concentration and often associated with knowledge centers, and;
– networks created by large companies operating in a given geographical area in specific industries where vertical value chains for a given product lead to important activities of external companies. They also constitute uncomplicated information structures, limiting the process of knowledge dissemination, the functioning of which results in substantial innovation.

Whereas other economists, such as Cook, Maskell, emphasize in their definitions of a cluster the factor of interaction among its members. They point to the vertical and horizontal relationships between firms that simultaneously collaborate and compete with each other within the same or similar industrial sectors (Cook, 2002; Maskell, 2001). Also Meyer and Stamer observe that clustering provides a unique opportunity to get involved in an extensive network of national ties between consumers and producers, as well as the economic sector involved in the creation of knowledge (universities and R&D institutions) and the sector involved in the production of goods and services. All these ties become an incentive for science and innovation (Meyer-Stamer, 1998; Zeng, 2008).

A characteristic feature of clusters is the fact that the companies within a cluster collaborate in those fields in which it is possible to generate synergies through joint actions. The mentioned synergy is mainly based on: the diffusion of know-how and staff turnover within the cluster; increasing productivity within the cluster through concentration of resources; openness to innovation and the ability to absorb innovation; attracting new resources and companies (Szultka, 2004).

Much of the arguments put forward in support of the idea of clustering are centered around the benefits that businesses within a cluster derive from "non-commercial dependencies" that support knowledge sharing and learning, and the primary sources of the competitive advantage of clusters are people and businesses learning about new technologies through sharing and exchanging information (Perry, 2005). Extensive market and technical knowledge as well as other specialized information accumulate in the firms and local institutions within a cluster, and thus can be accessed more easily or at a lower cost among the cluster members. This also applies to the flow of information between units of the same company. Proximity, supply and technological linkages, and the existence of repeated personal relationships and community ties fostering trust facilitate the information flow within clusters. Obtaining information about current buyer needs is an important special case of the informational benefits of clusters (Porter, 2000).

Cluster participation also offers advantages in terms of perceiving new technological or market possibilities. Participants can be exposed to richer insights into evolving technology, service and marketing concepts, and the like. Ongoing relationships with other entities within the cluster (including universities) facilitate such learning, as do the ease of site visits and face-to-face

contact. Direct observation of other firms is facilitated. The isolated firm, by contrast, faces higher costs and steeper impediments to assembling insights as well as a greater need to create knowledge in-house (Porter, 2001).

According to M. Chiarvesio and S. Micelli clusters are built on linkages and relationships that integrate the isolated technological capabilities of institutions, companies and individuals into a common, territorial good. The establishment of mechanisms that efficiently coordinate these relationships is a key factor for creating an environment that supports many forms of technological and intellectual exchange, risk sharing and collective learning. This is essentially a process based on territory, where people who share the same space discover the benefits of "learning through interaction" (Chiarvesio and Micelli, 2002, p. 80).

Although most of the literature focuses on the physical aspects of the functioning of clusters, much more difficult to grasp, yet equally important seem to be the relationships that are gradually built among the businesses within a cluster, the unofficial principles of mutual trust and cooperation, and the aforementioned intensive exchange of information between the participants of the cluster (Baran and Chodorek, 2007). R. Moss identifies the flexibility of the cluster structure, which enables the flow of knowledge and information, as one of the key success factors of clusters. While as a success factor for the effective functioning of the mechanism of information and knowledge transfer, the author points to a high quality of relations and mutual trust in the relationships between the participants of a cluster (Moss, 1995).

## | The Theory of Knowledge Management in Organizations

Knowledge can be defined in various ways, for example: "know-how and skills acquired through experience or education; the theoretical or practical understanding of a subject, the knowledge of a given field or general knowledge; facts and information, as well as awareness or familiarity gained by experience of a fact or situation" (Oxford English Dictionary).

According to the definition of the classics of knowledge management "knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information" (Davenport and Prusak, 1998, p. 5). Knowledge is also held by the employees of an organization or within the actual organization, often contained in documents, processes, practices and standards (Godziszewski, 2007).

Whereas knowledge management is "an emerging, interdisciplinary business model dealing with all aspects of knowledge within the context of the firm, including knowledge creation, codification, and sharing. It includes generating new knowledge, acquiring valuable knowledge from outside sources, using this knowledge in decision making, coding information into documents, databases, and software, facilitating knowledge growth, transferring knowledge to other parts of

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the organization, and measuring the value of knowledge assets and/or the impact of knowledge management" (Gupta, Sharma and Hse, 2004, p. 3).

In the literature on the subject most often three types of knowledge are identified: latent, explicit (formal) and tacit (silent) (Kraaijenbrink, Faran and Hauptman, 2006). Each of these types of knowledge is associated with different activities, the aim of which is the exchange of knowledge. Latent knowledge is the type of knowledge that can only be used by its holder, while others can only try to imitate its use by "groping about". The only way to make this knowledge available is its disclosure (Jashapara, 2006). Whereas formal knowledge is knowledge that can easily be manipulated. Direct action can be undertaken only with respect to this type of knowledge (Stankiewicz, 2006). While tacit knowledge is similar to latent knowledge, but it differs in terms of the results in the application of it. Tacit knowledge is strictly limited and inexplicable, associated with the degree of articulation of the knowledge. This means that it remains tacit if it cannot be articulated quickly enough in order to improve a given activity (Leonard and Sensiper, 1998).

In addition to the degree of tacitness of knowledge, there are also other important factors determining knowledge, such as its: complexity, independence and contextuality (Garud and Nayyar, 1994).

Noaka and Takeuchi believe that one of the main principles of the theory of knowledge creation is a dichotomy between tacit and formal knowledge. They emphasize the importance of the human factor and social interaction in the creation and development of knowledge assets. The theory that they put forward refers to knowledge assets formally divided into four categories (Nonaka and Takeuchi, 1995):

- conceptual knowledge assets (formal knowledge articulated through images, symbols and language);
- experiential knowledge assets (tacit knowledge shared through common experiences);
- routine knowledge assets (tacit knowledge routinized and embedded in organizational actions and practices);
- systemic knowledge assets (systemized formal knowledge).

Nonaka and Takeuchi emphasize that only formal knowledge can be managed. Tacit knowledge can be shared, it can also be revealed, and only then can it be managed.

Zeng distinguishes three frequently encountered types of knowledge flows: formal education (schools, training institutions, universities), non-formal (structured on-the-job training) and informal (skills acquired from family members or other members of a given community) (Zeng, 2008).

The process of knowledge flow and exchange in organizations remains strictly dependent on efficient cooperation. Effective knowledge sharing is supported by the skills, talents and abilities

of the employees of given organizations. The reasons for the occurrence of knowledge sharing depend on organizational as well as individual preferences. When analyzing information behaviors four factors influencing them can be observed, namely (Widen-Wulff, 2007):

– information culture and communication atmosphere;
– values, attitude and team work;
– individual roles, experience and status;
– the importance of networks, trust and timing.

Formal knowledge with a low degree of tacitness and contextuality can easily be distributed through documents (reports, magazines, procedures) and it can be memorized even without knowledge about the context. Endemic knowledge, as opposed to formal knowledge, is strongly dependent on the context, which may be different for the author than the recipient of the information. That is why the best examples of mechanisms for the transfer of this type of knowledge are using the best possible practices and improving the processes. Whereas experimental knowledge, containing a large number of hidden elements, may be transferred only through a medium in the form of people holding that knowledge. The fourth type of knowledge, i.e. existential knowledge (tacit and deeply rooted in a given context), can at the same time be distributed among professionals (Chai, Gregory and Shi, 2003).

## | Knowledge Management in Business Clusters

Nowadays, for businesses collaborating within clusters, as well as for other business entities, knowledge is one of the most important strategic resources. When characterizing clusters in terms of the knowledge management process that occurs within them, the following features of clusters can be distinguished (Hislop, 2005):

– multi-directional knowledge sharing;
– flexible and adaptive information sharing – easy to modify structures;
– dispersion of workforce – employees not assigned to individual positions;
– dispersion of knowledge resources – the knowledge required to perform tasks is geographically dispersed;
– work supported by information and communication technologies as an important means of communication and coordination;
– flattened hierarchies – limiting the amount of management levels;
– decentralization – unhierarchized structure;
– blurring of boundaries – boundaries between positions, departments and organizations belonging to the cluster are blurred.

The geographical proximity of the partners and members of a cluster provides opportunities to establish work and group relationships, on account of which there is a process of sharing

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knowledge and information within the cluster structures. The most important seems to be the trust that the employees of cooperating firms have for each other. Building trust, however, is a difficult process, which requires not only time, but also employees and their organizations adopting specific roles within a given cluster (Huotari and Iivonen, 2004).

The members of clusters and other cooperative relations trust each other on a voluntary basis, because they understand the potential of the mutual benefits arising from this cooperation (Cook, 2002). A comparative analysis of the interactions within network connections of companies has contributed to the creation of a threefold categorization of trust (Perry, 2005):

– Competence trust.

This refers to the confidence that the trading partner will perform their obligations competently and that they have the skills and capacity claimed.

– Contractual trust.

This form of trust refers to the confidence that specific agreements will be adhered to. Different degrees of contractual trust may exist depending on the willingness of the parties involved to accept oral agreements over written ones and the degree of written detail required.

– Goodwill trust.

This refers to mutual expectations that both parties have an open commitment to each other as reflected in their willingness to do more than that which has been immediately agreed. In effect, this means that there is less emphasis on establishing explicit commitments or defining performance levels than on maintaining an ongoing relation in which both parties are prepared to take initiatives for mutual advantage while refraining from opportunistic behavior (Chien, 2013).

In the case of clusters goodwill trust seems to be the most important factor, since it encourages mutual learning and the sharing of expertise in ways that promote improvement and innovation. Goodwill trust emerges through frequent and intensive communication, possibly implying experimentation with alternative candidates selected through exhaustive search processes (Perry, 2005).

Companies that are located within a cluster share the same value system and knowledge in such a way that they generate a certain cultural environment. Within this environment there are formal as well as targeted informal relationships, which together constitute a combination of collaboration and competition (Jastroch, 2010). In the described organizational culture of a cluster services are provided, such as the organization of conferences, seminars, social activities and trade fairs, resulting in the establishment of new relationships and new knowledge (Brusco, 1990).

The employees of business clusters establish social relationships with each other by, for example, taking part in research groups or research centers (Borgman, 2000). By belonging to a cluster businesses have the opportunity to establish contacts with scientific institutions and other local institutions that support the development of the cluster. Ties with scientific and research entities

as well as universities facilitate learning and the transfer of know-how within clusters (Ostergaard, 2009). Very often, this cooperation consists in the implementation of formal research projects (e.g. joint research, commissioned expertise, research and development), the mobility of researchers, the education of highly qualified graduates. At the same time, cooperation within a cluster can take place through informal contacts between the employees of companies and academic researchers. Especially in clusters formed around the high-tech sector, universities are often seen as an important source of knowledge.

Interactions within clusters that are mainly based on geographical and organizational proximity develop through the cooperation of the given community and the spread of knowledge (Orsenigo, 2007). Partners and colleagues from various collaborating companies and institutions give each other advice, expecting that their favors will become some sort of investment for the future. They share their experience also through informal contacts (Stacke, Hoffmann and Costa, 2012). For example, a worker in the production process can solve an unexpected technical problem on account of the fact that he consults this with a colleague from a competing company that belongs to the same cluster, who uses similar equipment in his work. At this point, his colleague from the competing company must decide whether or not to provide this kind of information. In cases where disclosure of such information would act against the interest of the company, he could decide to keep the information to himself. Otherwise, he can disclose it in the hope that in the future the colleague who is now in need will be able to return the favor (Schrader, 1991).

There is a general consensus that doing someone a favor increases the likelihood that this person in the future will return the favor with the same amount of transferred knowledge and information. This also depends on the value of the given information: the higher the resulting gain, the greater the chance that someone will do us a similar favor. For this reason, companies that trade information tend to favor partners who appear to be the most promising in terms of having useful knowledge (Dahl and Pedersen, 2001).

The transfer of knowledge constitutes an element of a relationship that is based on mutual trust (Roger, 1982). The formation of an informal network of contacts begins with the transfer of knowledge between two entities. Repeated interaction between them leads to a reduction of costs of future interaction due to the occurrence of certain customs and conventions that cause this relationship to become stable. Companies that establish vertical and horizontal relationships can profit from an atmosphere of trust and mutual understanding, which facilitates less formal contacts and interactions, both at company and employee level (Borgman, 2000).

Firms learn from the successes and failures of other companies and can then observe, discuss and compare the solutions that others have already implemented. This way, companies belonging to a cluster participate in the ongoing process of learning by comparing various solutions, making choices, copying others, as well as adding their own ideas (Maskell, 2001).

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The analyzed mechanisms of knowledge management within business clusters, in terms of the benefits from the cooperation between the allied companies, have been confirmed by actual cluster members[2]. Among the benefits that companies can reap by being part of a cluster, the ones that are mentioned most often are establishing broader business relationships with other companies and better access to market information. Better access to information about new technologies and innovation was the third most frequently cited benefit of belonging to a cluster.

## Conclusion

Knowledge management in clusters is a collective and complex phenomenon. There are several very important aspects of this process, which undoubtedly include: the existing network of connections between cluster members and their employees, trust, knowledge and motives (Widen-Wulff, 2007). The most important benefit coming from the creation of business clusters is their ability to generate knowledge by combining existing information and data coming from the internal databases of businesses within clusters with the influx of new information. The transfer of knowledge within clusters constitutes an important element of relationships based on mutual trust. Formal contacts of employees with cooperating institutions provide the employees with general knowledge and the best practices; benchmarking based on collective knowledge that is widely used. While informal contacts are important channels for the transfer of tacit knowledge, i.e. the so-called operational know-how within a cluster. The creation of knowledge and the process of sharing it have become one of the most important new organizational practices. Entrepreneurs in clusters use knowledge as a key source of competitive advantage. The transfer and diffusion of knowledge and technologies within the structure of a cluster improve the innovativeness of cooperating companies, and thus also the competitiveness of these companies (Grudzewski and Hejduk, 2004). An efficient flow of knowledge between partners is becoming a priority for the effective management of a cluster.

[2] The author has conducted a qualitative pilot study among functioning clusters of the Kuyavian-Pomeranian Voivodeship and the Podkarpackie Voivodeship in Poland in 2011. The research study included 6 institutions managing clusters from the above-mentioned regions. The study was conducted in the form of in-depth interviews (IDI) with the representatives of the management of the clusters.

References

Baran, M. and Chodorek, M. (2007). Rola klastra w procesie zarządzania wiedzą w przedsiębiorstwie. In: J. Bogdanienko, M. Kuzel and I. Sobczak (eds.), *Zarządzanie wiedzą w warunkach globalnej współpracy przedsiębiorstw*. Toruń: Wyd. A. Marszałek.

Borgman, C. (2000). Scholarly communication and bibliometrics revised. In: B. Cronin and H.B. Atkins (eds.), *The Web of Knowledge*. Medford NJ: Information Today.

Carayannis, E.G. and Wang, V. (2008). The Role of the Firm in Innovation Networks and Knowledge Clusters. In: E.G. Carayannis, D. Assimakopoulos and M. Kondo (eds.), *Innovation Networks and Knowledge Clusters. Findings and Insights from the US, EU and Japan*. London: Palgrave MacMillan.

Chai, K., Gregory, M. and Shi, Y. (2003). Bridging islands of knowledge: a framework of knowledge sharing mechanisms, *International Journal Technology Management, 25*(8).

Chiarvesio, M. and Micelli, S. (2002). Networks without technologies in industrial districts of Northeast Italy. In: A. Markussen, *Cluster Policies – Cluster Development?* Nordregio Report 2001. Stockholm: Nordregio.

Chien, Yu, Tsai-Fang, Yu and Chin-Chieh, Yu (2013). Knowledge sharing, organizational climate, and innovative behavior: a cross-level analysis of effects, *Social behavior and personality*, *41*(1), http://dx.doi.org/10.2224/sbp.2013.41.1.143.

Cook, P. (2008). Asymmetric Knowledge, Digital Knowledge Flow Platforms and Regional Innovation Systems. In: E.G. Carayannis, D. Assimakopoulos and M. Kondo (eds.), *Innovation Networks and Knowledge Clusters. Findings and Insights from the US, EU and* Japan. London: Palgrave MacMillan.

Davenport, T.H. and Prusak, L. (1998). *Working knowledge. How Organizations Manage What They Know*. Boston: Harvard Business School Press.

Garud, R. and Nayyar, P. (1994). Transformative capacity: continual structuring by intemporal technology transfer, *Strategic Management Journal*, *15*(5).

Godziszewski, B. (2007). Stan zarządzania wiedzą w polskich przedsiębiorstwach – próba oceny. In: J. Bogdanienko, M. Kuzel and I. Sobczak (eds.), *Zarządzanie wiedzą w warunkach globalnej współpracy przedsiębiorstw*. Toruń: Wyd. A. Marszałek.

Grudzewski, W.M. and Hejduk, I. (2004). *Zarządzanie wiedzą w przedsiębiorstwie*. Warszawa: Difin.

Grupta, J.H.D., Sharma, S.K. and Hsu, J. (2004). An Overview of Knowledge Management. In: J.H.D. Gupta and S.K. Sharma (ed.), *Creating Knowledge Based Organization*. London: Idea Group.

Hislop, D. (2005). *Knowledge management in organizations. A critical introduction*. Oxford: Oxford University Press.

Huotari, M.L. and Iivonen, M. (2004). Managing knowledge-based organizations through trust. In: M.L. Huotari, M. Iivonen (eds.), *Trust in Knowledge Management and Systems in Organization*. Hershey: Idea Group.

Jacobs, D. and De Man, A.P. (1996). Clusters, Industrial Policy and Firm Strategy: A Menu Approach, *Technology Analysis & Strategic Management*, *8*(4).

Jashapara, A. (2006). *Zarządzanie wiedzą. Zintegrowane podejście*. Warszawa: PWE.

Jastroch, N. (2010). Knowledge Transfer in Collaborative Knowledge Management: A Semiotic View, *Systemics, cybernetics and informatics*, *8*(6).

Kraaijenbrink, J., Faran, D. and Hauptman, A. (2006). Knowledge Management. In: A. Jeffer, J. Kraaijenbrink, H.H. Schroder, F. Wijnhoren, *Knowledge Integration. The Practice of Knowledge Management in Small and Medium Enterprises*. Heidelberg: Physica-Verlag.

Leonard, D. and Sensiper, S. (1998). The role of tacit knowledge in group innovation. *Californian Management Review*, *40*(3).

Markusen, A. (1996). Sticky Places in Slippery Space: A typology of Industrial Districts. *Economic Geography*, *72*(3), http://dx.doi.org/10.2307/144402.

Maskell, P. (2001). Towards a Knowledge-based Theory of the Geographical Cluster, *Industrial and Corporate Change*, *10*(4), http://dx.doi.org/10.1093/icc/10.4.921.

Meyer-Stamer, J. (1998). *New Dimensions in Local Enterprise Co-operation and Development: From Clusters to Industrial Districts*, Contribution to ATAS Bulletin XI, "New approaches to science and technology co-operation and capacity building", The Hague and Duisburg, November.

Moss, R. (1995). *Kantor Word Class*. New York: Simon & Achuster.

Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-Creating Company*. New York: Oxford University Press.

OECD (1999). *Boosting Innovation: The Cluster Approach*, Raport OECD.

Ostergaard, C.R. (2009). Knowledge flows through social networks in a cluster: Comparing university and industry links, *Structural Change and Economic Dynamics*, *20*, http://dx.doi.org/10.1016/j.strueco.2008.10.003.

Perry, M. (2005). *Business clusters – an international perspective*. Routledge, http://dx.doi.org/10.4324/9780203310694.

Porter, M.E. (2001). *Porter o konkurencji*. Warszawa: PWE.

Porter, M.E. (2000). Location, competition, and economic development: local clusters in a global economy. *Economic Development Quarterly*, *14*(1), http://dx.doi.org/10.1177/089124240001400105.

Rogers, E.M. (1982). Information exchange and technological innovation. In: D. Sahal, *The transfer and utilization of technological knowledge*. Lexington Mass.

Stacke, A.R., Hoffmann,V.E. and Costa, H.A. (2012). Knowledge transfer among clustered firms: a study of Brasil, *An International Journal of Tourism and Hospitality Research*, *23*(1), http://dx.doi.org/10.1080/13032917.2011.653634.

Stankiewicz, M.J. (2006). *Zarządzanie wiedzą jako kluczowy czynnik międzynarodowej konkurencyjności przedsiębiorstwa*. Toruń: Dom Organizatora.

Szultka, S. (2004). *Klastry – innowacyjne wyzwanie dla Polski*. Gdańsk: IBnGR.

Widen-Wulff, G. (2007). *The challenges of knowledge sharing in practice. A social approach*. Oxford: Chandos Publishing.

Zeng, D. (2008). *Knowledge, technology and cluster-based growth in Africa*. Herndon, VA, USA, World Bank.

 DOI: 10.7206/mba.ce.2084-3356.83