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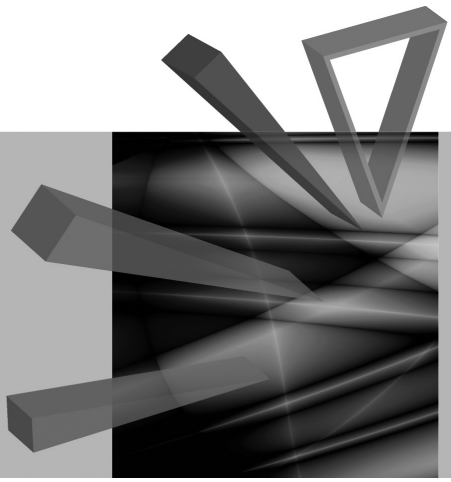
Innovation Sources of Economies in Eastern Asia



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Innovation Sources of Economies in Eastern Asia ISSN 1899-3192

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NETWORKED CLUSTERS IN THE CONTEXT OF KNOWLEDGE-SEEKING STRATEGY OF INTERNATIONAL BUSINESS[1]

Summary: Global resourcing is characteristic for the globalisation of the 21st century, focused on the qualitative dimension of the process of internationalisation of the world economy. Transnational corporations, through utilisation of capital resources, implement a strategy of global configuration using local comparative advantages in the form of competitive human resources, knowledge and technical resources. Clusters that have been created within developing economies, involved in global corporate networks, demonstrate increasing importance of innovation and flexibility as determinants of efficiency and international competitiveness of firms and regions.

Keywords: cluster, networking, R&D, knowledge-seeking, global resourcing.

1. Introduction

The phenomenon of global resourcing is the hallmark of globalisation at the turn of the 20th and 21st century, focused on the qualitative dimension of the internationalisation process of the global economy.[2] Transnational corporations (TNCs), using capital resources at the disposal, implement a global strategy based on spatial configuration of business activities through identification of local comparative advantages, like competitive human, knowledge and technology resources. The purpose of this paper is to identify the role of cluster structures that are increasingly incorporated into global corporate networks as the source of knowledge and innovativeness or R&D centres.

[1] The authors acknowledge financial support from the research grant "Clusters as an innovation carrier of enterprises and regions. Verification and implementation of Asian models in terms of the Polish economy" No. DEC-2011/01/D/HS4/01204, funded by the National Science Centre, Poland.

[2] This stage is defined as economic globalism, closely related to the liberal vision of the global economic order (J.H. Dunning, Towards a new paradigm of development: Implications for determinants of international business, *Transnational Corporations* 2006, Vol. 15, No. 1, pp. 180–181).

2. Global resourcing

TNCs' coordination role in the globalisation process is connected with the creation of a new kind of qualitative relationships between the various entities of the world economy, while utilising available capital resources. Global resourcing, which can be associated with TNCs decision-making process, comes down to a selection of chain of value (COV) components to allocate, location and business partners.[3] According to Pakulska and Poniatowska-Jaksch,[4] this term should be understood as a process of obtaining property or access[5] to production capacities abroad.

The expansion of international business, driven by the progressive liberalisation of international flows and technological progress,[6] with special regard to development of information and communication technologies (ICT), implies an increased demand for human capital which is a carrier of knowledge. This changed the traditional understanding of the categories of "labour" and "human resources" – to a lesser extent a price and increasingly quality of the production factor will be a determinant of TNCs' location decisions. Therefore, host markets will be perceived through the prism of growth and market potential, as well as institutional and cultural resources, etc.[7]

The context of global resourcing in the area of R&D requires an extension of traditional formula of anthropogenic capital[8] with information, knowledge and cultural resources, which, unlike labour and capital, are characterised by reduced mobility. Human capital, as the production factor, while a market for goods and services, is seen today as a critical variable of growth function,[9] because of undeniable correlation with the level of socio-economic development of a country. Therefore, productivity, determined by qualifications, technical equipment and the structure of economy, seems to be a key aspect of analysis. It is far more difficult to assess the

[3] *The Emerging Global Labour Market: Part III – How Supply and Demand for Offshore Talent Meet*, McKinsey Global Institute, June 2005, p. 14.

[4] T. Pakulska, M. Poniatowska-Jaksch, *Korporacje transnarodowe a globalne pozyskiwanie zasobów*, Szkoła Główna Handlowa w Warszawie, Warszawa 2009, p. 69.

[5] In such a case a foreign company holds ownership of particular resources/capabilities, while TNCs receive only conditional access.

[6] B. Skulska (Ed.), *Biznes międzynarodowy w regionie Azji i Pacyfiku*, Wydawnictwo Adam Marszałek, Toruń 2009, pp. 32–41.

[7] A. Sullivan, S.M. Sheffrin, *Economics: Principles in Action*, Pearson Prentice Hall, Upper Saddle River/New Jersey 2003, p. 5.

[8] Further information about resources: K. Kuciński, *Geografia ekonomiczna. Zarys teoretyczny*, SGH, Warszawa 1994, p. 43; S. Czaja, A. Becla, *Ekologiczne podstawy gospodarowania*, Wydawnictwo Akademii Ekonomicznej we Wrocławiu, Wrocław 2007, pp. 42–49.

[9] See also: E. Hanushek, L. Woessmann, The role of cognitive skills in economic development, *Journal of Economic Literature* 2008, No. 46, September, pp. 607–668; H. Rindermann, Relevance of education and intelligence at the national level for the economic welfare of people, *Intelligence* 2008, No. 36, March, p. 127–142; R. Scharff, Towards knowledge based economies in the European Union. Winners and trailers, [in:] B. Brocka-Palacz, E. Teichmann (Eds.), *The Lisbon Strategy from a Perspective of Chosen Countries and Regions*, Warsaw School of Economics, Warsaw 2009, pp. 52–55.

impact of such elements as employment policy, quality of economic governance system, efficiency of human resource management, value system, entrepreneurship and work ethic.[10] Developed countries are characterised by high-quality human capital, which is both receptive and deep market. Acquiring knowledge in order to conduct research and develop knowledge will thus imply the need to penetrate locations with high-quality human capital – TNCs' investments are expected to induce socio-economic development, which in turn serves to improve the quality of local human capital.

Knowledge resources are associated with information resources.[11] Lukasik-Makowska and Niedzielska link category of knowledge with learning process, while developing information tools and techniques.[12] It should be noted that cultural resources, previously marginalised, attract much attention these days, sheding new light on debate concerning the paradigm of development, as it was manifested by Dunning in his synthetic approach to the concepts of Sen, Stiglitz and North. These resources, understood as the interaction between community and territory, are perceived as a growth factor for economic efficiency and, therefore, become the subject of global resourcing.

The cluster is an example of such positive spatial interconnections that result in intensive exchange of various material and non-material assets between formally unrelated companies, accompanied by interactions with other local actors, e.g., governments, trade associations, universities, banks and media within favourable business environment.[13]

3. Cluster structures

Clusters[14] are, according to Porter, well-known economist of Harvard Business School, the exemplification of a typical paradox that "the competitive advantage in

[10] A good example is the role of "Asian values" and Confucianism in development processes in East Asia (The "Asian" Values, the "Asianisation of Asia" and the "ASEAN Way", [in:] *Asian Regionalism and Japan*, IDE APEC Study Center, Working Paper Series 96/97-No. 2, Jiro Okamoto Economic Cooperation Department, March 1997, pp. 17–25).

[11] Literature lacks an unambiguous definition of information; Griffin recognised information resources as all kinds of useful data for effective decision-making; information is at the same time a commodity, resource and production factor (based on R.W. Griffin, *Podstawy zarządzania organizacjami*, PWN, Warszawa 2004, pp. 5–6).

[12] B. Łukasik-Makowska, E. Niedzielska, Społeczeństwo informacyjne – już teraźniejszość czy dopiero perspektywa?, [in:] A. Łapińska (Ed.), *Informacja w społeczeństwie XXI wieku*, Uniwersytet Warmińsko-Mazurski, Olsztyn 2003, p. 35.

[13] J. Duraj, M. Papiernik-Wojdera, *Przedsiębiorczość i innowacyjność*, Difin, Warszawa 2010, pp. 109–115.

[14] For statistical data on operating clusters and outsourcing R&D service centres see: www.clusterobservatory.eu; *Monitoring Industrial Research: The 2010 EU Industrial E&D Investment Scoreboard*, Joint Research Centre, European Commission, Luxembourg 2010; *World Investment Report*

the global economy is based increasingly on local resources, such as knowledge, relationships and motivations that are not available for distant competitors".[15] He defined clusters as a geographical concentration of interconnected companies, specialised suppliers, service providers, businesses operating in related sectors, as well as related institutions (such as financial, training, research, standardisation institutions and trade associations), in specific areas, which compete and cooperate with each other. Thus, a departure from the traditional understanding of the role of location,[16] on the one hand, reflects significant changes in the field of technology and competition, and on the other hand – points to the serious implications in the acquisition of resources on a global scale. It turns out that cluster structures may become, when reaching an appropriate critical mass,[17] an instrument of competition policy under the dynamic knowledge-based economy.[18]

Modern theoretical approaches move away from Marshall's industrial district for the extended manufacturing cluster model based on SMEs, while taking into account the growth of service clusters, operating in high-technology sectors, increasing importance of TNCs, network – affiliated international companies, and finally – the contribution of public and private institutions.[19]

In the literature, there are many different classifications of clusters. According to Markusen,[20] there are three basic forms: industrial districts (the dominance of the SME sector companies, strong, flexible specialisation, the occurrence of a system of relationships based on trust, the possibility of the creation of a significant potential

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2011. Non-Equity Modes of International Production and Development, UNCTAD, New York/Geneva 2011; *Information Economy Report 2010. ICTs, Enterprises and Poverty Alleviation*, UNCTAD, New York/Geneva 2010.

[15] M.E. Porter, Clusters and the new economics of competition, *Harvard Business Review* 1998, November-December, Reprint No. 98609, p. 78.

[16] M.E. Porter, Location, competition, and economic development: Local clusters in a global economy, *Economic Development Quarterly* 2000, Vol. 14, No.1, pp. 15–34.

[17] See also: T. Brodzicki, S. Szultka, Koncepcja klastrów a konkurencyjność przedsiębiorstw, *Organizacja i Kierowanie* 2002, nr 4.

[18] According to Porter, clusters affect competition in three ways: by increasing business productivity, stimulating innovation, determining future productivity growth and initiating the process of creating new businesses to strengthen the cluster (based on M.E. Porter, Clusters and the new economics…, *op. cit.*, p. 80).

[19] *Competitive Regional Clusters. National Policy Approaches*, OECD Reviews of Regional Innovation, OECD, 2007, pp. 25–26.

[20] G.-M. Isbasoiu, *Industrial Clusters and Regional Development. The Case of Timisoara and Montebelluna*, RTN Urban Europe Program and University of Urbino, Italy 2007, p. 7; for other classifications of clusters see also: M.E. Porter, *The Competitive Advantage of the Nations*, The Free Press, New York 1990; S.A. Rosenfeld, *Industrial Strength Strategies: Regional Business Clusters and Policy*, Aspen Institute Rural Economic Policy Program, Best Practice Series, Industrial Stren Strategies, 1996; S.A. Rosenfeld, Bringing business clusters into the mainstream of economic development, *European Planning Studies* 1997, Vol. 5, No. 1; M.J. Enright, Regional clusters and economic development: A research agenda, [in:] U. Staber, N.V. Schaefer, B. Sharma (Eds.), *Business Networks: Prospects for Regional Development*, DeGruyter, New York 1996.

for innovation), hub and spoke (coexistence of large firms affiliated hierarchically with a wide range of SME sector firms, a source of potential – TNCs, cost advantages, flexibility) and satellite (dominating, large group of SME companies dependent on external companies, location cost advantages). In the context of global resourcing in the area of R&D, the key role can be attributed to cluster structures involving large corporations – a source of capital for research activities in regions of lower socio-economic development.[21]

Organisation for Economic Cooperation and Development (OECD) argues in its report on the issue of competitive regional clusters that "countries are seeking ways to strengthen or develop the potential enabling a concentration of innovative companies associated with the structures of the knowledge economy (...) clusters are considered as effective and pragmatic instrument of managing resources and building partnerships".[22] OECD, conducting research dedicated to critical for the knowledge-based economy innovation clusters, indicates the role of both business entities as "knowledge-generating agents and consumers",[23] while distinguishing the traditional and the modern concept of the cluster (see Table 1).

Table 1. Characteristics of traditional and knowledge-based cluster

	Traditional	Knowledge-based
Phase of life	mature sectors, shaped concentration	young sectors, new concentrations
Type of relationships/ transactions	long-term relationships, shaped by locally oriented supply chains	temporary coalitions for joint R&D activities induced by the market
Innovation activities	gradual innovations, absorption of technologies	technological innovations

Source: authors' own study based on *Regional Clusters in Europe: Observatory of European SMEs*, European Commission and Enterprise Directorate-General, No. 3, Brussels 2002.

The increase of cluster structures associated with the knowledge-based economy will generate significant multiplier effects, encouraged increasingly by external location determinants and structural transformation of regions (very often specific agglomerations) of developing countries, which will result in the intensification of R&D activities within those parts of the world.[24]

[21] D. Barkley, M. Henry, *Advantages and Disadvantages of Targeting Industry Clusters*, REDRL Research Report 09-2001-01, Regional Economic Development Research Laboratory, Clemson University, Clemson, SC, September 2001.

[22] *Competitive Regional*…, *op. cit*., p. 11; Furman, Porter and Stern point to cluster structures environment as one of the key components of the innovation potential of a country, next to the institutional, resource and political frameworks (based on J.L. Furman, M.E. Porter, S. Stern, The determinants of national innovative capacity, *Research Policy* 2002, Vol. 31, p. 905).

[23] See also: *Boosting Innovation: The Cluster Approach*, OECD Publications, Paris 1999; *Innovative Clusters: Drivers of National Innovation Systems*, OECD Publications, Paris 2001.

[24] What is worth noting in this context is an unprecedented growth of outsourcing urban clusters in many developing regions, such as Kuala Lumpur, Cyberjaya, Manila NCR, Hyderabad-Secunderabad,

4. Globalization of R&D activities

High value-added services of a higher degree of complexity, including R&D activities, are still located in home countries of many corporations, particularly within the Triad markets (the US, Western Europe, Japan); however, with the development of global networks, the trend towards the relocation of R&D centres to developing regions worsened (e.g., China, India, Vietnam, Singapore, Brazil, the Russian Federation). This is accompanied by the phenomenon of high integration of research, including that of the basic strategic importance within dynamically operating information centres,[25] equipped with the latest generation of infrastructure and human capital of the highest quality.

Because of extraordinary costs of creating knowledge and its strategic role, TNCs choose between typical offshore outsourcing and captive offshoring to protect interests and utilise potential of host business environment (see Figure 1).

More and more companies, determined to develop knowledge and technological intensity of products, outsource and externalise R&D activities, crossing domestic market' borders (captive offshoring or offshore outsourcing). Strategic importance of these COV components creates preferences towards both contractual linkages with foreign related and unrelated entities and concentration – as a consequence, business networks engaging local staff, material and non-material assets are shaped with a special emphasis on the regions with clustered structures – structures that favour economies of scale and dynamic spillovers among participants.

The fragmentation of COV results in spatial dispersion of production processes in order to increase global efficiency of business. In the case of the East Asian region, networking is based on vertical, niche specialisation of local economies, intensive intra-industry trade in parts and components, and arm's length, back and forth transactions, while American and European business networks reflect orientation on intra-firm operations, both on the domestic and the cross-border scale.[26] Together

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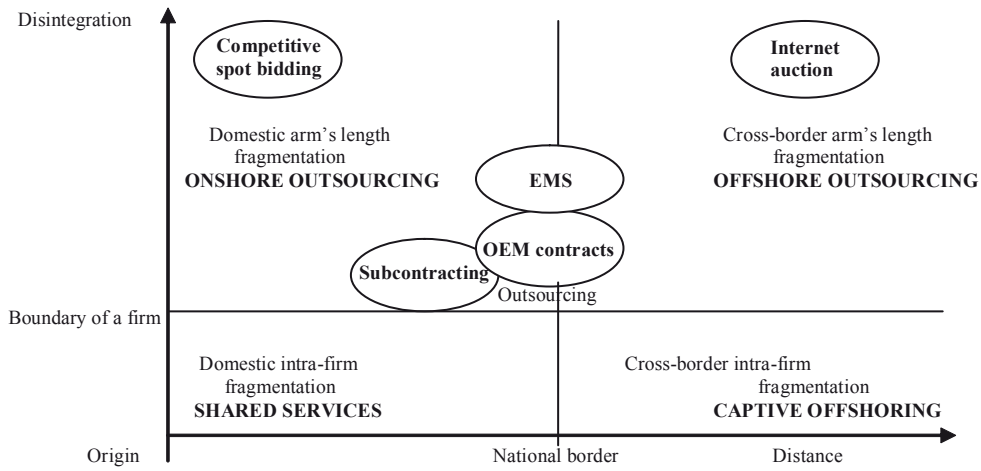
Delhi NCR, Greater Sao Paulo; within operating outsourcing R&D locations Tholons Report listed e.g. Sankt Petersburg, Bangalore ("the Indian Silicon Valley"), Moscow, Shanghai, and Dublin; among the developing R&D centres, e.g., Bucharest, Beijing, Chennai, Cracow and Prague were mentioned (for further studies see: P. Dicken, *Global Shift: Transforming the World Economy*, Paul Chapman, London 2003; A.D. Bardhan, C. Kroll, The new wave of outsourcing, *Fisher Centre Research Report*, No. 1103, University of California, Berkley 2003, http://repositories.cdlib.org/iber/fcreue/reports/1103; *World Investment Report 2004. The Shift Toward Services,* United Nations – UNCTAD, New York/Geneva 2004, pp. 147–148; *Top 50 Emerging Global Outsourcing Cities*, A Global Services-Tholons Study*,* October 2009, pp. 6–9; www.globalservicesmedia.com).

[25] Y. Doz, J. Santos, P, Williamson, *From Global to Metanational. How Companies Win in the Knowledge Economy*, Harvard Business School Press, Boston/Massachusetts 2001, pp. 33–34; See also: *Outsourcing Comparison Study. South-East Asia. China, India, Vietnam 2011–2012*, Consulate General of the Kingdom of Netherlands Guangzhou April 2011.

[26] For further information see: M. Ando, F. Kimura, *Fragmentation in East Asia: Further Evidence*, ERIA-DP-2009-20, Jakarta, ERIA 2009.

with disintegration of production processes, expansion of service offshoring is observed – more and more non-material input is acquired at long distance within emerging world, with special regard to BRIC markets.[27]



EMS – electronics manufacturing services

OEM – original equipment manufacturing

Internet auction = an auction of customised parts and components via the Internet

Figure 1. Outsourcing and offshoring

Source: authors' own study on F. Kimura, M. Ando, Two-dimensional fragmentation in East Asia: Conceptual framework and empirics, *International Review of Economics and Finance* 2005, Vol. 14, No. 3, pp. 317–348; *The Emerging Global Labour Market: Part III – How Supply and Demand for Offshore Talent Meet*, McKinsey Global Institute, June 2005, p. 15; F. Kimura, A. Obashi, *Production Networks in East Asia: What We Know So Far*, ADBI Working Paper 320, Asian Development Bank Institute, Tokyo 2011, p. 8; http://www.adbi.org/working-paper/2011/11/11/4792.production. networks.east.asia/.

Among the factors determining the location of R&D activities in developing countries two types should be listed: push factors, including competitive pressure, the costs of innovative activity in the home country, and pull factors, including the availability of talent and potential of the host market, political factors, e.g., quality of education, protection of intellectual property rights, and finally – supporting factors, including low cost of doing business, well-developed physical and communication infrastructure, the legal system, the availability of services supporting the R&D sector.[28]

[27] Brazil, the Russian Federation, India and China.

[28] K.G. Gonzales, M.-L.R. Macasaquit, J.T. Yap, *Determinants of Locating R&D Activity in the Philippines: Policy Implications*, Discussion Paper Series No. 2010-07, Philippine Institute for Devel-

It should be noted that cluster structures operating in the 21st century draw their strength not so much because of the geographical dispersion of economic activities of co-operating external companies, but from the internal exchange of "informal" knowledge and mutual relationships of various kinds of cluster participants. Manufacturing activity is a subject to increasingly transfer beyond the geographical boundaries of the cluster, which contributes to the intensification of internal links within strategic components of chain of value, resulting from a decision regarding the allocation of TNCs' capital in the global space. Transnational corporations will therefore acquire resources on a global scale, including those necessary for R&D activities – e.g., knowledge, human capital of high quality and physical assets, engaging clusters in their global networks, based increasingly on the learning system model. Undoubtedly, innovative cluster structures operating under specific spatial limitations have become a source of knowledge and development potential for TNCs operating on a global scale. In this context, it is important to distinguish between two business structures: networks and clusters that intertwine each other because of relocation of R&D activities (see Table 2).

Table 2. Clusters and networks, according to Rosenfeld

Clusters	Networks
attract necessary specialized services at lower cost to a region	allow firms access to specialized services at lower cost to a region
open membership	restricted membership
based on social values that foster trust and encourage reciprocity	based on contractual agreements
generate demand for more firms with similar and related capabilities	make it easier for firms to engage in complex business
both cooperation and competition	cooperation
collective visions	common business goals

Source: authors' own study based on S.A. Rosenfeld, Bringing business clusters into the mainstream of economic development, *European Planning Studies* 1997, Vol. 5, No. 1.

As already mentioned, TNCs oriented on acquiring strategic resources seek for distant low-wage locations to absorb and create knowledge and innovations. Networking allows engaging local capabilities, infrastructure and unrelated companies in R&D activities; however, cluster structures encourage concentration of processes in order to stimulate spillovers and maximise net effects.

According to European Commission's data, there is a tendency towards concentration of R&D activities within the geographic boundaries of clusters, while capital equipment production is carried out in very few clusters. This fact confirms the

opment Studies, April 2010, p. 5.

thesis of continuous internalisation of research within clusters, while raw materials and capital equipment are increasingly sourced internationally (externalised).[29]

5. Conclusions

Cluster structures, evolved and established in the era of dynamic progress of information and communication technologies and liberalisation of economic policies, derive their potential from knowledge – both formal and informal, as well as accumulated, selected, developed and exchanged among cooperating entities. The logic of the economic system based on knowledge motivates TNCs to perceive comparative advantages through the prism of locally available, partly immobile human, information, cultural and institutional resources, increasingly concentrated in cluster structures, involving actors from the emerging markets and developing countries. As centres of R&D activities, knowledge-based clusters have become a participant of global business networks coordinated by various TNCs.

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[29] *Regional Clusters in Europe*, *op. cit*., pp. 33–34.

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USIECIOWIONE KLASTRY W KONTEKŚCIE STRATEGII *KNOWLEDGE-SEEKING* BIZNESU MIĘDZYNARODOWEGO

Streszczenie: Zjawisko *global resourcing*, tj. globalnego pozyskiwania zasobów, stanowi wyznacznik globalizacji XX/XXI wieku ukierunkowanej na wymiar jakościowy procesu internacjonalizacji gospodarki światowej. Korporacje transnarodowe, wykorzystując pozostające w dyspozycji zasoby kapitałowe, kształtują strategię globalnej konfiguracji działalności, identyfikując lokalne przewagi komparatywne w postaci konkurencyjnych zasobów ludzkich, zasobów wiedzy oraz zasobów technicznych. Tworzone w obrębie gospodarek rozwijających się struktury klastrowe włączane w globalne sieci korporacyjne dowodzą rosnącej rangi innowacyjności i elastyczności determinujących tak efektywność, jak i międzynarodową konkurencyjność firm i regionów.

Słowa kluczowe: *networking*, klastry, *global resourcing*, strategia *knowledge-seeking*.