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**The Competence Centres in IT business ecosystem.
Case study**

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Abstract

The global, innovative firms have been using new tools to create relations based on value-changing, especially knowledge because global customers are more exacting and they take decisions more knowingly. The systemic business ecosystems show the possibility to gain synergy effects that are a result of combination of competencies of systemic partners. As it is shown by research results, the entities of studied IT sector implement the goal in the so-called business eco-systems based on knowledge diffusion, especially through the Competence Centres. The results have practical application due to the fact that the article contains practices of sectoral leaders. The social value is shown by finding innovative way of knowledge diffusion.

Keywords: systemic business ecosystem, systemic/net products, knowledge diffusion.

JEL Classification: L14.

Introduction

The Competence Centres have played an important role in the process of knowledge diffusion. It has been observed for example in IT sector. The purpose of this article is to identify the definitions, place and role of CC in IT business ecosystem, in the case of chosen IT leaders and their co-operators, in the area of IT systemic/net products. Critical analysis of literature in the field of studied category is conducted in the article and qualitative method of empirical studies (case study) is applied for practical illustration of described processes and phe-

nomena. In the initial stage of the research promoters of systemic/networking products have been selected, through the review of experiences and using the criterion of their position on the Polish market. They include IBM, Intel, HP, Microsoft and Apple. Then, their network partners, especially distributors, and cooperants outside the network have been determined and sub-networks of partners have been selected. In the period between 2000 and 2015, the Author regularly analysed the content of Internet webpages of selected entities and authorised press / / sponsored interviews presented in IT magazines, including Computerworld, IT-manager, CIO and another one.

1. Competence Centres in holistic knowledge management model. Preamble

According to one of the first holistic approaches to knowledge management (KM), in Alavi's and Leidner's view, it is defined as systematic and specific process of acquiring, organising and communicating workers' implicit and explicit knowledge in organisational terms. Its purpose is to increase effectiveness of productivity of other involved entities, while showing the presence of „other entities” of the environment in the process in a quite concise way [1999, p. 239]. KM was more broadly perceived by Bounfour who approached – it as a set of procedures, infrastructure, technical and management tools created for the purpose of creating, sharing and expanding knowledge resources inside and outside organisation [2003].

A holistic/integral approach to knowledge management is undoubtedly presented in Demerest's model [Demerest 1997, pp. 374-384]. The structure of this model shows not only a scientific expression of knowledge, but also social aspects of knowledge formation. It is not limited to the stage of knowledge externalisation but concerns repeated social interactions. KM ought to be supported by all organisation stakeholders. This, consequently, will be reflected in results of all involved parties. This is about a complementary approach to knowledge management as scientific and social category [McAdam, McCreedy 1999, pp. 91-101].

Holistic approach to knowledge management (SET KM Model) is based on three pillars: (1) company strategy, e.g. strategic organisational concept of knowledge and learning, (2) environment of creation, co-sharing and application of knowledge, that depends on the company and objective determinants, (3) knowledge tools favouring the process of effective knowledge management [Choo 1998; Nonaka, Konno 1998, pp. 40-54; von Krogh, Ichijo, Nonaka 2000; Alvarenga Neto 2008].

According to Choo's views [1998], the company functioning as knowledge-based is an enterprise that approaches knowledge in strategic dimension (1),

through the prism of its significance in a particular context of creation and decision making.

The awareness of the importance of knowledge in a definite dynamic and complex environment of company functioning and the ability to search for, and interpret, appropriate information constitutes the strategic goal of the company. It allows understanding of trends and scenarios of the environment, that is made of customers, cooperating parties, competitors and other entities. Knowledge creation is a process of forming and/or acquiring knowledge, or information organising and processing for the purpose of generation of new knowledge through dispersion and learning in organisation. Now, generated knowledge constitutes foundations for assumptions aiming at creation of new knowledge. Thereby, it serves development of new skills and competences inside the company and among other participants in the so-called knowledge-community (community of knowledge), in which various entities can be the participants. More formally it is described with the notion of Competence Centres (CC).

Competence Centre can be defined as an organisational unit that coordinates and combines skills of the whole organisation (sometimes of several organisations) for the purpose of supporting its business needs. Thus, it is an entity established for satisfaction of internal needs of organisation. The Centre approached, in this way, quite frequently develops knowledge-based relationships with Universities. Another definition [Gartner 2007], describes Competence Centre as an organisational structure applied to coordinate IT skills with an enterprise. Such a sectoral form of CC is quite frequently applied in economic practice. Therefore, it is an option of the aforementioned form of Competence Centre, that focuses on IT tools. There are also the notions of integration competency centre (ICC) or an integration centre of excellence (COE) functioning in literature and in practice [Schmidt, Lyle 2005]. These forms of the Centre particularly emphasise the effects resulting from integration of IT solutions. Competence Centres perform the function of knowledge repository and a “pool of resources” for many business areas, including subsectors of IT sector. They also combine resources of business cooperants and customers with knowledge inside organisation. Therefore, it is a holistic form of Competence Centre. Holistic IT Competence Centres work in development of applications, skills associated with programming language, data management and development of Internet services as well as network designing for the needs, and in cooperation with customers and business partner. This is done to achieve synergistic effect of network, in the form that satisfied customer.

2. Data and methodology

The purpose of this article is to identify the definitions, place and role of CC in IT business ecosystem, in the case of selected IT leaders and their cooperants, in the area of IT systemic/net products. A brief critical analysis of literature, in the field of studied category is conducted in the article, and qualitative method of empirical studies (case study) is applied for practical illustration of researched Competence Centres in systemic knowledge relationship model. During the studies of the entities, that form net business environment for creation of systemic offer under the patronage of computer sector leaders, including HP, Intel, Microsoft, IBM and Apple, over 400 entities were identified. According to studied leaders, they were involved in CC. They are entities of various (narrow or broad) range of offer functioning within computer subsectors or telecommunication and/or media sectors, in the sphere of production, assembly and/or distribution. In-depth case study method was applied with reference to purposely selected group of enterprises representing the core of network relationship, the so-called extended core of network and entities of the circle of IT sector networks (Table 1).

Table 1. Basic information about performed research

Specification	Characteristics of performed study
Research technique	analysis of Internet pages, analysis of sponsored interviews in IT journals
Sample selection	purposeful selection
Sample size	5 promoters of network relationship
	9 entities of extended network core
	9 entities of network circle
Criteria of selection of sample group	purposeful selection by indications of promoters and/or position in the ranking of companies by turnover
Spatial range of research	Poland and global range
Time range of research	2000-2015

In-depth case study analysis method used in this research, consists in comprehensive presentation of a real situation occurring in a particular company or in regard to one of the functions realised within the company (e.g. marketing knowledge management). It is treated as an individual case. It involves seeking for all necessary data enabling its in-depth analysis, formulating possible options of choice and making the best possible decision, accompanied by a proper justification. Application of this method seems well founded, considering the following:

- the research concerns contemporary, dynamic phenomena and the process of knowledge formation, pertaining to these phenomena;

- the research concerns investigating actual contexts of these phenomena, concerning significant ambiguity of boundaries between the very phenomena and their contexts;
- the object of the research is too complicated, to explain cause and effect relationships with the help of methods such as poll or experiment.

The unit of analysis / the subject of the studied case are “complex situations”, i.e. groups of economic subjects (particularly leaders of network structures and partners) and their market behaviour. The case reflects changes, that are new and to some extent critical for the investigated subjects, particularly in Polish conditions.

3. Competence Centres in holistic model of knowledge management in multi-core network structure in the light of results of own case study

Identified holistic model of KM [Sztangret 2015] is a structure composed of three major subsystems of KM, including the subsystem of competences inside the organisation and inside the network, knowledge of the competitor and cooperating party and subsystem of customer's/user's knowledge. According to Demerest's concept [1997], the model describes social context and refers to social interactions, that shape the open nature of the model. Each of the subsystems constitutes a set of procedures, infrastructure, technological and management tools, activated for the purpose of creation, sharing and developing knowledge resources.

The process of KM in IT network, includes the whole, three-dimensional spectrum of knowledge creation in an enterprise and network, while emitting and absorbing knowledge in relationships with customers and cooperating entities. This happens after these relationships are established, through creative compilation and dispersion in the network and making knowledge inter-processed in a controlled way. Furthermore, structural analysis of marketing KM in the studied network shows a classical hierarchic model (“top-down”), that emphasises a remarkable importance of network. Promoters have the key knowledge resources at their disposal. Due to activity of at least several entities in the network circle observed in this sphere, the style of “centre-up-down” style is also noticed. It refers to the entities in the network circle – Promoter – final users. Simultaneously the “centre-down” style, that refers to entities of the network circle – final user, is observed too.

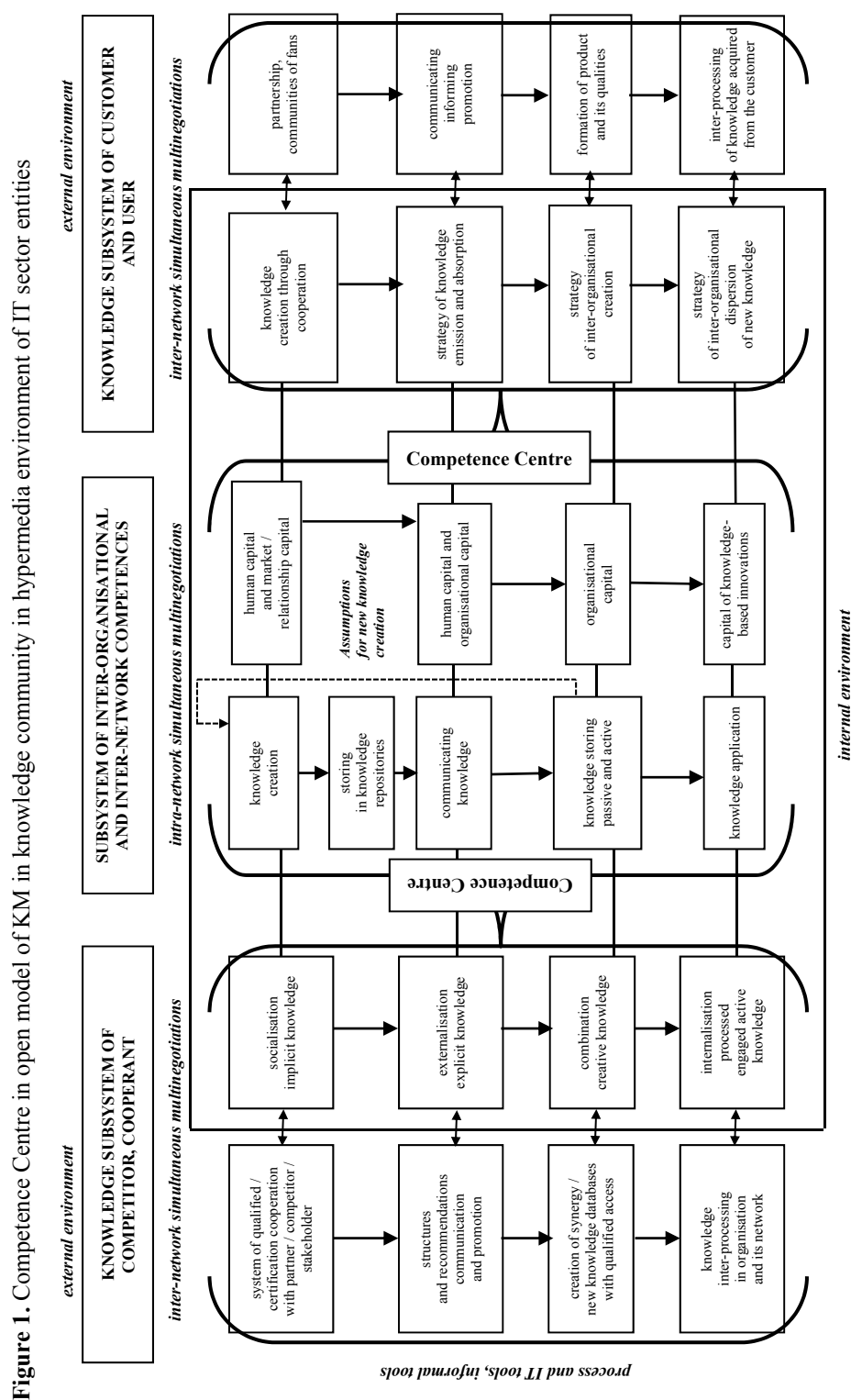
It has an extensive character because of the multitude of diversified entities involved in knowledge formation. Integration and synergy attitude of these enti-

ties to its creation, is the fact supporting vertical dimension of knowledge of studied network of entities. Involvement of knowledge in the process of creation of innovative, system IT products, constitute characteristics of the so-called advanced, interdisciplinary (multisector) knowledge. Interdisciplinary and multi-sector character of knowledge in studied example results from creation of conditions by analysed companies, particularly Promoters, to benefit from the network of values, based on knowledge of many involved entities. According to classical concept of computer sector subsectors, they are representatives of computer, telecommunication and media sectors convergent with respect to business and technology, as well as operators functioning on various stages of the process of creation of the final product, starting from assembly through complementary services (integration, training, outsourcing, cloud computing, etc.), and finishing with distribution with value added (VAD, VAR).

The core entities of the studied network, definitely and explicitly apply qualified certification system in knowledge-based subsystems of cooperant relationships. Some entities of extended core of studied network, and almost all entities of the network circle have open access to communities and resources of network knowledge.

In the case of analysed entities, features of asymmetrical bureaucratic network, and asymmetrical social network in the case of the network circle were diagnosed. In the case of entities of extended network core, a group of business partners, including distributors, are the recipients of activities stimulating knowledge-based relationships, most often of technological, knowledge-based and financial character. For the group of leaders, they are entities diversified with respect to products or areas of cooperation. Entities of network circle, including distributors, are focused on technological knowledge in network relationships. According to declarations, activities aiming at creating knowledge-based relationships with cooperating party are mostly an individual initiative of studied entities. Some entities of the network circle make use of experiences of network Promoters, in this sphere.

Subsystem of customer knowledge communities of entities that are Promoters of the studied network is formed according to the principles of asymmetrical social networks, which is similar to the group of entities of extended network core and the network circle. Initiatives in the sphere of these relationships in the group of Promoters concern many, diversified groups of recipients, e.g. business recipients with specification of targeted activities for SMEs and large enterprises and Universities, schools, other non-profit entities and local government units, students and also opinion leaders, fans, IT final users and societies in general.



Slightly more selective method of acting is applied, at least by some entities of extended network core, while focussing on, for example, a narrow group of fans of computer games, or more broadly on the group of the unemployed, particularly women or for example only on secondary schools. Extensively approached user, in general, is most frequently the recipient for the enterprises of network circle.

Knowledge communities, for which Competence Centre can be the form of implementation, are often formed in cooperation with, and at the initiative of, entities from business environment. They include government and local authorities, social organisations, societies and agencies for development. Less frequently, they are formed in cooperation with other entities of the sector. In the group of companies of extended core of researched net-structure in IT sector, the form of activities undertaken by them independently is predominant. In the case of companies of network circle, passive attitude relying on knowledge communities of the network leader happen to be additionally observed. In three studied groups, social and cultural, as well as technological tools that are conducive to knowledge exchange as ways to activate members of the knowledge communities are predominant.

Table 2. The tools of knowledge-based subsystems in IT sector

Cooperant	Customer
formal and free access competence centres	formal and informal communities of practice for technology access; users group
system of qualified cooperation	formal educational programmes and consulting
Value Added Reseller Programs, Value Added Distributor Programs	free-network knowledge diffusion group

The scope of ways and tools for activating community members is definitely broader and more diversified in the group of network Promoters.

4. Competence Centres as the subjects of IT knowledge diffusion

Competence Centres of studied companies or knowledge promoters, while creating a specific type of knowledge communities, provide competence and equipment-related support mostly to commercial partners but also to customers. They significantly facilitate the processes related to porting, testing and also integrating applications, created in response to market needs. The centres provide professional assistance on every stage of application development and lifecycle, while enabling remote or local access to the latest technologies, software tools and secure IT laboratories. Additionally, specialists lead workshops and technological seminars for business partners in the sphere of new IT products (Table 3).

Table 3. Competence Centres and communities of IBM, Microsoft, Intel, HP and Apple

IBM Innovation Centre (IIC)	Microsoft Partner Membership Centre	Intel IT Centre	HP Community	Apple Users Group
1	2	3	4	5
43 global centres, 29 centres in the region	Community forms: Partner Network Support, Partner Support Community, Microsoft Community Connections, Microsoft Partner Network, Internation Association of Microsoft Certified Partners (IAMCP), Worldwide Partner Conference (WPC), Akademia Microsoft	Intel Support Community, IT Peer Network, Maker Community	HP Enterprise Business Community, HP Discussion Boards, HP Developer Community, HP Community: <ul style="list-style-type: none"> • Prong Community • Vertica Community • Protect 724 • Enterprise 20/20 • Enterprise Business • Software Solutions 	Apple User Group Support Team (group managers) Apple User Group International Regional Liaisons (regional group managers) Apple User Group Pro and Online Group (managers of cooperants) Apple User Group Advisory Board – consultancy group for contacting and supporting knowledge communities Apple User Group leaders worldwide- consultancy group for supporting regional and local knowledge communities Apple Consultants Network – <i>group of experts offering dynamic presentations on the subject of the latest technological achievements and providing access to these products</i>
IBM Software Business Partners Blog IBM Collaborate for Success Blog	Microsoft US Partner Team blog	Intel blogs Jobs@Intel Blog Policy@Intel Blog CSR@Intel Blog	HP Blog Hub	24 Apple Blogs np, MacRumors, Macworld, Appleinsider, Imre, theMacObserver, macnn
147 specialist communities, e.g. IBM PureData-Enzee Community, IBM PartnerWorld Community, Industry Solutions Business Partner Community, IBM Security Community, IBM Asset and Facilities Management Community, IBM Cloud Computing community, IBM Software Community, The Worldwide IBM InfoSphere Community, IBM Service Management community, The				Apple Support Communities; 63 Global / Mac User Group / knowledge communities: Austrian MacintoshOnline Community, Mac OS Mailing Environment, Internet Only Macintosh Users Group, MacAttorney, University of Chicago Macintosh User Group, The Macintosh Guild, History and Macintosh Society, MacLaw, Digital Video Professionals Association, Apple Online Junkyard, American Airlines MUG, Apple League, Boston BBS of Virtual Harbor, Jeuxmac.com, Fielding Institute Mac User Group, GUM-BCN (Macintosh de Barcelona),

table 3 cont.

1	2	3	4	5
Worldwide IBM ECM Community, ICS Business Partner Community, Middle East and North Africa Business Partner Community, IBM Solutions for Smart Business, Nordic IBM Managed Service Providers Community, IBM Energy Management Community, Worldwide Websphere Business Partners Community				InterMactivity, PowerSchool Users Group, PlanetMUG, AUG Luxembourg, Macintosh News and Information, MacFreak(tm) Interactive, Club Mac-Net Puerto Rico, Est. 1998, Mac User Group Long Island, MacSverige, iMacChat, MacCommunity, Billpalmer.net Macintosh User Group, Mac Mentor – Internet Mac Users Group, Spymac User Group, A2Central.com, Virtual Mac, PinoyMac.org, MacList.net, The Different District, MUGnetwork.com, MacCoil, Grupo de Usuario en Linea Infomac, BBR All Things Macintosh, MacInsider, Christian Macintosh Users Group, International Internet Mac User Group, Iranian Mac User Group, Spider-Mac Apple User Group Italia, Worldwide/Philippines Mac User Group, Mac Owners Support Group, Logic Users Group, MacForum – Comunitatear Mac, The Apple Groups Team, Team MacOS X, Mac1, GenteMac, Final Cut Pro User Group Sweden, Mac uporabniki Slovenije, ElmaSuyu, MacMap, Thessaloniki Mac User Community, Louisiana Cajun Cutters, Aperture Users Professional Network, Mac User Group Argentina, apple.spot.ee, MacLife.gr Greece, Macanudos
IBM on Twitter IBM on Facebook IBM on LinkedIn	Microsoft on Facebook, Microsoft on Twitter Microsoft on LinkedIn Microsoft on Google Plus Microsoft on SlideShare	Intel on Twitter Intel on Facebook Intel on LinkedIn Intel YouTube	HP on Twitter HP on Facebook HP on LinkedIn HP on Google Plus HP on SlideShare	Apple on Twitter Apple on Facebook Apple on LinkedIn Apple on Google Plus Apple on SlideShare Apple YouTube

Source: Own case study on the basis of: [www 1; www 2; www 3; www 4].

Benefits for partner resulting from participation in community of competence centres include:

- reduction of expenses associated with software development – shorter production cycle and remote access to test centres;
- immediate reacting to market needs – integration of own solutions with the newest platforms of knowledge promoter;
- broadening of application reach – multiplatform solutions offering the customer the freedom of choice;
- fast increase in effectiveness – access to the latest technologies of promoter and ready test environments;
- knowledge expansion – broad training offer in the sphere of creation of solutions compatible with promoter's platform;
- quality improvement – designing, creating and testing of high quality scalable and reliable solutions;
- minimisation of risk – ensuring compatibility of solutions;
- greater customer satisfaction – providing integrated, scalable and reliable solutions.

The scope of support from Promoter most often includes: collecting partner's/customer's demands, planning solution architecture, development of hardware configuration, preparing licence model, software, preparing and conducting tests in IIC and preparing documentation for the solution. However, on the other hand, more or less formalised CC forms, listed in Table 3, create a customer who is prepared for application of these IT solutions.

Conclusions

Competence Centres are the main elements in the structure of Holistic Knowledge Management Model identified in IT sector. The model is a result of integration of knowledge management in its three subsystems: company/network and in relationships with customer and cooperant. CC is its predominant tool. HKMM with CC, is a multi-functional aggregate for knowledge generating, storing, communicating and applying in network structures of the studied IT sector. It is coordinated by the leaders of the sector. Studied leaders in the sector, create and establish relationships with partners within CC in the way typical for them, for example by certified system. They most often tend towards their holistic form. However, they often expand the scope of activities in this sphere by new entities and thus they engage their competences. It has been observed for example in the case of Competence Centre of IT entities and universities in Po-

land recently, and this shall constitute another research area for the Author. This form of cooperation is useful for all participants of relations, due to knowledge diffusion, that is basic resource, especially in innovative sectors.

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