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Inter-Sectoral and Sub-Sectoral IT Business Ecosystem vs. Systemic Relationships Profile in the Selected Cases

Summary

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 competencies combination of systemic partners. It has been observed for example in the IT sector. The purpose of this article is to identify the structure and profile of business ecosystem and its dynamics, in case of chosen IT leaders and their co-operators, in area of IT systemic/net products. A critical analysis of literature in the field of studied category is conducted in the article and a qualitative method of empirical studies (case study) is applied for a practical illustration of the described processes and phenomena. At the initial stage of the research systemic/networking products promoters have been selected, through a review of experiences and using the criterion of their position in the Polish market. They are: IBM, Intel, HP, Microsoft, and Apple. Then their network partners, especially distributors, and co-operants 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 other ones. As it is shown by research results, the entities of the studied sector implement the goal in the so-called business eco-systems based on non-competitive relationships of companies and the identified systemic business ecosystem model in the IT producers and distributors sector is precisely defined. The results have practical application due to the fact that the article contains practices of sectoral leaders. The social value is shown by finding an innovative way of meeting customers' needs.

Key words: systemic business ecosystem, systemic/net products, ecosystems model.

JEL codes: L14

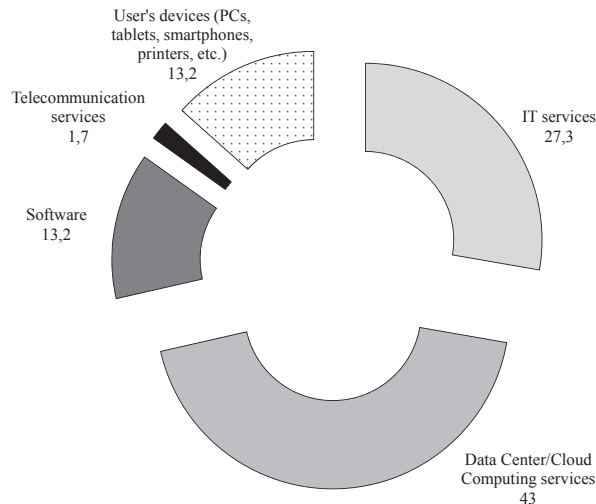
Introduction

Material product (computer) satisfies customer needs only together with accompanying services (software as well as assembly and installation). This determines the features of *subsector systemic character* of the computer product. A systemic offer is implemented by the entity that also operates in computer sector subsectors: production/assembly, integration services, training, distribution, etc., or by several enterprises – participants in these subsectors that join together in network relationship¹. The complementary nature

¹ The companies “are placed in the networks of values because their products are usually embedded or hierarchically set – as components in other products and finally in end systems of use” (Marples 1961; Alexander 1964; Christensen 2010, p. 78).

of teleinformation sector services that is definitely not mutually exclusive, results in the fact that integration, implementation or advisory contracts usually bring agreements of training, IT system maintenance or control of work and effects. Therefore the tendency of disappearance of submarkets of the computer sector, and thus disappearance of independent production subsectors, integration services, software, training, etc., is observed. This is why we can speak about a specific subsector business ecosystem. It is supposed that such a pro-service trend of development of the sector will be predominant in the nearest future (Figure 1).

Figure 1
Sale of IT solutions in the perspective until 2020



Source: *Potential of ICT sector growth in Poland, in the perspective of 10 years*. The Ministry of Economy, <http://www.mg.gov.pl/node/20043> [access: 07.01.2014].

The need of an individual and a business customer in the sphere of integrated voice, image and data transmission, independently of the type of used networks and distance between subscribers, brought the necessity to offer convergent products and services that serve their provision. This is the demand of their competitiveness in integrated sector of landline and mobile telephony, computer equipment and network, as well as media, which definitely determines *intersector systemic character of IT products*. The convergent/systemic offer is provided on the basis of integrated teleinformation network that enables transmission of all types of electronic communication signals independently of their source, by means of interweaving technologies. A uniform teleinformation or information infrastructure is formed, the quality of which determines the competitiveness of economies and communities. The market dimension of *convergence* in the IT sector is expressed by creation of offer packages

by operators and service providers that constitute an integrated commercial product, the so-called IT network service. *Service convergence* concerns among others the use of services regardless of the access techniques. *Technical convergence*² lies among others in application of uniform common technical solutions that serve implementation of functionally diversified services. And so we face the situation in which the limits between sectors of telecommunication, IT and electronic media disappear (Usługi konwergentne w środowisku heterogenicznym [Convergent services in heterogeneous environment] 2008; Konwergencja – przegląd usług konwergentnych w Europie i na świecie [Convergence – review of convergent services in Europe and in the world] 2006).

With respect to the above, economic entities unite, or have shares in enterprises operating so far in various sectors, or they separate new entities from their structures that are supposed to be engaged in a new type of activity. In this case it is *business convergence*, for the purpose of complementing the market offer of one-sector entities, which is also referred to as intersector business ecosystem.

Data and methodology

The purpose of this article is to identify the structure and profile of business ecosystem and its dynamics, in the case of selected IT leaders and their co-operators, in the area of IT systemic/net products. As it is supposed, the identified systemic business ecosystems model in the IT sector is dynamic, multi-sectoral and multi-core, a profile of cooperative knowledge communities diversified by studied groups of entities. 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 the researched systemic relationship model. During the studies of the entities that form the net business environment for creation of the convergent systemic offer under the patronage of computer sector leaders, including HP, Intel, Microsoft, IBM, and Apple, over 400 entities were identified that, according to studied leaders, were involved in direct network relationships. They are entities of various (narrow or broad) ranges of offers functioning within computer subsectors or telecommunication and/or media sectors, in the sphere of production, assembly and/or distribution. The in-depth case study method was applied with reference to a 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).

² Some evolution of the notion of convergence in the IT sector in technological dimension ought to be indicated. Convergence of technology in the IT sector was mainly identified with communication technologies and diffusion of services of landline and mobile networks. Currently increasingly more often this notion is used with reference to strictly network solutions, associated with Ethernet, mass memories, Fibre Channel protocols (including FC over Ethernet) or iSCSI. In other words, it is integration of servers, mass memories, network solutions and management systems ("Konwergencja w sieciach komputerowych" [Convergence in computer networks] 2015).

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
	11 entities of distribution sphere
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
Time range of research	2000-2014

Source: own case study.

The in-depth case study analysis method used in this research consists in a 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), which is treated as an individual case. It involves seeking for all necessary data enabling its in-depth analysis, formulating possible choice options 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 is “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.

Profile of cooperative network relationships on the example of IT business ecosystem

According to the concept of network marketing, intersector enterprises of the IT business ecosystem are defined through relationships with entities of the sectors of telephony, media and IT sub-sectors, and also with consumers and all other cooperating parties, including

trade entities. The network partners are defined by their relationships with other enterprises and their role in these relationships (Żabiński 2007, p. 31), established for creation of *convergent products*.

The IT business ecosystem identified during the research is based on knowledge-based relationships that are established between all network participants. At the same time, qualitative and quantitative dynamics of the structure is observed that was characterised by a stable number of coordinating centres and lack of circulation of competences in this sphere, and a growing number of entities on the network. In the last period of the studies, a dual character of the structure appeared. It was a result of relationships of the network entities with Apple Company that stayed isolated before. Relationships in the studied structure are based on the synergy of chains of values and complementary character of resources of network participants (Table 2).

Table 2
IT business ecosystem profile

Profile criterion of network relationships		Options		
Flexibility - dynamics	Structure number in determined time intervals	growth in the number of elements		decline in the number of elements
	Character of the dynamics	quantitative	quantitative and qualitative	qualitative
Coordination	Number of centres coordinating the work of the network	large	average	small
		variable	relatively stable	stable
	Circulation of competences in the sphere of coordination	circulation of competences		lack of circulation of competences
Scale of activity	Structure number / number of entities in the network	small	average	large
	Chain of values	synergy of chains of values		number of links creating chain of values
	Overlapping of network structures	separate structures		permeating structures, of at least two cores
Character of relationship in the network		complementary		substitutive

Source: like in Table 1.

The entities of the core of studied chain definitely and explicitly apply qualified certification system in cooperative knowledge-based relationships. Open access to communities and resources of network knowledge let some entities of the extended core of the studied network and almost all entities of the network circle in. In the case of studied entities characteristics of asymmetrical bureaucratic networks and in the case of network circle – asymmetrical social network were diagnosed. The group of business partners, including distributors in the

case of entities of the extended network core constitutes the recipients of actions stimulating knowledge-based relationships mostly of the technological knowledge-based and financial character. For the group of network leaders, they are entities diversified by products or areas of cooperation. The entities of the network circle, including distributors, are focused on technological knowledge in network relationships (Table 3).

Table 3
Profile of knowledge-based cooperative relationships in the IT business ecosystem

Criterion	Option			
Access to cooperation	qualified, certification		<i>open cooperation</i>	
Network type	<i>unsymmetrical social network</i>	<i>unsymmetrical bureaucratic network (contracts, certificates)</i>	integrated bureaucratic network (property rights)	
Access	<i>Open</i>		Closed	
Range of activity and degree of diversity of activities	narrow, concentrated	broad		
		selective	diversified, complete	<i>non-diversified, complete</i>
Way of establishment of knowledge communities by the criterion of degree of individualisation and cooperation	cooperation with entities from closer environment	<i>individual activities</i>	<i>passive activities, under promoter's auspices</i>	
Tools of activation of knowledge community members	social and cultural	<i>technological, knowledge-based</i>	financial	

Key:

Network relationship promoters

Entities of the extended network core

Entities of the network circle

Source: like in Table 1.

Activities aiming at establishment of knowledge-based relationships are most often an individual initiative of the studied entities according to their declarations. Some of the entities in the network circle take advantage of experiences of the network Promoters in this sphere³.

Effects of knowledge diffusion and inter-processing in relationships of IT product sector entities and trade sector partners

Activities in the sphere of knowledge diffusion between promoters and other knowledge network entities in the sector of IT products and their partners (distributors), that are the ex-

³ More on this subject in publications of the author: Sztangret, Bilińska-Reformat 2015, p. 62-80; Sztangret, Bilińska-Reformat 2014, p. 34-54.

pression of realisation of one of the subsystems of the holistic MKM (Marketing Knowledge Management) model, are one of the reactions to the will to face demands of the increasingly demanding target customer. This customer very frequently expects business and technical consultancy and thereby specialist knowledge. This is the reason for growing significance of the so-called VARs (Value-Added Resellers)⁴ and VADs (Value-Added Distributors) in the IT market that eagerly make use of knowledge-based relationships, its promoters or entities of the extended network core. Together with development of the IT sector, it turned out that only larger or specialised enterprises, the turnover of which with a particular producer was so high that the income covered the costs of maintenance of technical teams, can afford to maintain highly-qualified staff. This is why there occurred the need to have a partner that could provide resellers with technical knowledge and resources for the purpose of common implementation of projects that a particular reseller could not implement independently due to lack of resources and lack of knowledge. From the point of view of resellers, the benefit consists in the fact that they can serve the customer in a complex way while not bearing the long-term costs related to appropriate staff because it is what is provided by an enterprise of the VAD type. VAD is a distributor creating the market in the sphere of appliances and solutions they sell. VAD is an active support for sale together with partners through sharing knowledge, creation of solutions or after-sales service. The VAD type company offers pre-sales support, assistance in preparation of appropriate offer documentation, participation in implementation and specialised technical training. Besides, as a distributor of frequently several product lines, they are often an initiator and author of many conferences and technical workshops to which both the partners and their customers are invited. The aim of this is to educate the market in the sphere of the latest IT solutions. Producers also benefit from cooperation with VAD, particularly if they do not have expanded their structure because most of the tasks concerning training, pre-sales support and implementation are performed just by VAD. At the same time, the value-added distributor contributes in this way to significant expansions of sales channel of resellers who, while having close relationships with customers, can implement jointly with VADs practically any information technology projects (Table 4).

VAD distributors work in development and education of entities of the sales channel, technical support, marketing and generation of a new project. Financing and logistics is a standard in distribution. They transfer knowledge to the reseller channel and enhance competences and offer complex solutions that are looked for by end-users. Therefore VAD offers include trainings, consultancy, technical knowledge sharing, and assistance in configuring, providing demo equipment that is used by the reseller both to present the solution to the end user and to get knowledge about the equipment capabilities. They also include technical pre- and after-sales assistance. A VAD company must have the whole range of products and services intended for sales channels they serve, including specialist shops, commercial chains and telecommunication operators, among others (Smoktunowicz 2014).

⁴ VAR status is obtained by companies that guarantee the producer appropriate turnover and good implementation references at their minimal involvement through close cooperation with usually one producer, high technological competences and involvement in a particular sphere (Smoktunowicz 2014).

Table 4**Dynamics of incomes of the companies conducting distribution activity of VAD and VAR type in Poland between 2006 and 2013 (in %)**

Company	2006/2007	2007/2008	2008/2009	2010/2011	2011/12	2012/2013
ABC Data	22.9	7.5	-12.4	10	23	23
Action SA	39.2	28.6	-17.7	34	27	34
AB SA	23.4	11.3	-10.1	30	20	19
Komputronik	53.4	34.9	14.1	18	25	22
Incom SA	-	-	-	8	-11	27
Veracomp	19.9	8.3	5.1	16	21	57
NTT System	81.4	16	-24.1	18	3	6
Praxis SA	2.7	4	-12.6	3	11	76
RRC Poland	35	-31.8	15.3	13	6	28
Arcus	20.5	21.6	-11.1	-28	38	66
Senetic	-	-	-	67	83	97

Source: own case study on the basis of Computerworld TOP200, Ranking of information technology and telecommunication companies 2006-2014

It can be clearly seen from the data presented in the table above that dynamics of incomes of companies conducting distribution activity of the VAD and VAR type increased after the key years of 2008 and 2009. According to managers of IT companies, these are the years after which activities favouring value added in the form of specialist knowledge and consultancy as well as active participation and/or development of competence centres were intensified. It is noticed that the very strict but deep specialisation can be the strength of smaller distributors, which is illustrated by dynamics of incomes in relatively young Arcus and Senetic companies in recent years. In the Polish market, the number of small entities of the VAD type is slowly but regularly growing. Caseking, StorageCraft, Bakotech, Westcon, Prianto are new entities in this group beside the already significant Veracomp, Avnet, RRC Poland, Alstor, Arrow ECS, and Connect Distribution companies, in which value added in the form of knowledge of individualised character resulting from close relationship with customers is the key advantage. The value of knowledge is also noticed by the so-called distributors-broadliners⁵, who expand the portfolio of services for integrators and develop demo equipment resources. For example, Tech Data Company, which is a VAD type distributor, separated Azlan brand that offers Cisco, HP and IBM products among others. For a similar purpose, AB Company established the Enterprise Business Group section and Action Company created the Enterprise section.

⁵ Activity of typical broadliners assumes the necessity of formation of demand in the market by the producers themselves. This results from adopted business model that assumes ensuring of only financing and logistics support, and this is why, investments in creation of logistic centres occur. In this case, producers have to form their own expensive resources.

The significance of value added in the form of knowledge by distributors finds its expression in investments in training centres in these enterprises. Such centres function in organisational structures including Tech Data (Azlan Competence Center), AB (AB Competence Centre) and Action (Educational Centre Action).

Conclusion

The systemic character of computer product demands inter- and sub-sector cooperation from its suppliers to create such a bundle of profits that will satisfy the target customer. The entities of the studied sector implement the goal in the so-called business eco-systems based on non-competitive relationships of companies. Such business ecosystems that constitute the network of complementary chains of values resulting from partners' knowledge representing subsectors of computer sectors as well as telephony and media, and also distributors, are actually structures of three various groups of entities with respect to the implemented model of cooperation knowledge-based relationships. Efficiency of such network knowledge-based relationships is illustrated by results achieved by entities of VAD and VAR type in the Polish market.

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Międzysektorowy i subsektorowy ekosystem biznesu a profil systemowych relacji w wybranych przypadkach

Streszczenie

Globalne firmy innowacyjne stosują nowe narzędzia celem tworzenia relacji opartych na zmianie wartości, szczególnie na nauce, ponieważ globalni klienci są bardziej wymagający i podejmują swe decyzje w sposób bardziej świadomy. Układowe ekosystemy biznesowe ukazują możliwość uzyskania efektów synergii, które są wynikiem połączenia kompetencji partnerów systemowych. Obserwuje się to na przykład w sektorze IT. Celem artykułu jest identyfikacja struktury i profilu ekosystemu biznesu i jego dynamiki w przypadku wybranych liderów IT i ich kooperantów, w dziedzinie systemowych/netto produktów IT. W artykule przeprowadzono krytyczną analizę literatury w dziedzinie badanej kategorii, jak również zastosowano jakościową metodę badań empirycznych (studium przypadku) dla celów praktycznej ilustracji opisanych procesów i zjawisk. Na wstępnym etapie badań wybrano promotorów systemowych/sieciowych produktów poprzez przegląd doświadczeń i stosując kryterium ich pozycji na polskim rynku. Są to: IBM, Intel, HP, Microsoft, Apple. Następnie określono ich partnerów sieciowych, zwłaszcza dystrybutorów i kooperantów spoza sieci, jak również wybrano subsieci partnerów. W okresie między rokiem 2000 a 2015 autorka regularnie analizowała zawartość stron internetowych wybranych podmiotów i autoryzowane/sponsorowane wywiady prasowe prezentowane w magazynach IT, zaliczając do nich Computerworld, IT-manager, CIO i inne. Jak na to wskazują wyniki badań, podmioty badanego sektora realizują ten cel w tak zwanych ekosystemach biznesu opartych na niekonkurencyjnych relacjach między firmami; poza tym został dokładnie określony model zidentyfikowanych układowych ekosystemów biznesu w sektorze producentów i dystrybutorów IT. Wyniki mają zastosowanie praktyczne ze względu na fakt, że artykuł zawiera informacje o praktykach liderów sektorowych. Wartość społeczna została ukazana poprzez odnajdywanie innowacyjnego sposobu zaspokajania potrzeb klientów.

Słowa kluczowe: układowych ekosystem biznesu, produkty systemowe/netto, model ekosystemów.

Kod JEL: L14

Межсекторная и субсекторная информатическая экосистема бизнеса контра профиль системных отношений в избранных случаях

Резюме

Глобальные инновационные фирмы используют новые инструменты для формирования отношений, основанных на изменении ценностей, особенно на знаниях, поскольку глобальные клиенты более требовательны и они принимают решения более сознательно. Структурные экосистемы бизнеса указывают возможность получать эффекты синергии, которые являются результатом

объединения компетенций системных партнеров. Это наблюдается, например, в секторе информационной техники. Цель статьи – выявить структуру и профиль экосистемы бизнеса и ее динамику в случае избранных лидеров информационной техники и сотрудничающих с ними субъектов в области информационных системных/нетто продуктов. В статье провели критический обзор литературы в области изучаемой категории и применили качественный метод эмпирического изучения (изучение конкретной проблемы) для практической иллюстрации описанных процессов и явлений. Во вступительной части изучения избрали поощрителей системных/сетевых продуктов путем обзора опыта и применяя критерий их позиции на польском рынке. Ими являются: IBM, Intel, HP, Microsoft, Apple. Затем определили их сетевых партнеров, в особенности дистрибьюторов, и сотрудничающих с ними субъектов вне сети, а также выбрали субсети партнеров. В период между 2000 и 2015 гг. автор регулярно анализировала содержимое интернет-сайтов избранных субъектов и авторизованные интервью в печати (спонсируемые интервью), представленные в журналах по информатике, в том числе *Computerworld*, *IT-manager*, *CIO* и пр. Как на это указывают результаты изучения, субъекты исследуемого сектора осуществляют цель в так называемых бизнес-экосистемах, основанных на неконкурирующих отношениях фирм; кроме того, четко определили выявленные структурные бизнес-экосистемы в секторе производителей и дистрибьюторов информационной техники. Результаты имеют практическое применение ввиду того, что статья содержит сведения о практиках лидеров сектора. Общественная ценность указана путем поиска инновационного способа осуществления потребностей клиентов.

Ключевые слова: структурная экосистема бизнеса, системные/нетто продукты, экосистемная модель.

Коды JEL: L14

Artykuł nadesłany do redakcji w maju 2015 roku

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