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ECONOMICS OF REGIONAL CLUSTERS

Author: Dr. György Kocziszky
Translation: **Balázs Illés**



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Introduction

In the early 1970s small and medium-sized enterprises around Europe were faced with two (strongly interrelated) problems:

- Due to the amplified effects of globalization, the opportunities in their markets had been narrowed. This effect had been generated by well-funded inter- and multinational companies.
- Greater investments in R+D projects were needed to survive in the market and maintain their operations. Nevertheless, these investments were risky and sometimes the funds were not available either.

The weakening of SMEs poses a great threat to the competitiveness of the European Community because these enterprises have their particular role in the economies especially in:

- economic growth,
- creating new jobs,
- product diversification,
- strengthening social cohesion and
- reducing regional disparities.

Small and medium-sized enterprises (despite their high level of adaptation and readiness) have significant competitive handicaps against large companies because of their size and because of a lack of capital and information.

One of the greatest questions of sustainable long-term economic growth is the performance of the majority of enterprises (the SMEs), whether they can join the mainstream economic processes and act upon the challenges of the markets or not.

Economic policies found the solution for this question in the regional cluster which is:

- established in one integrated value chain,
- concentrated and delimited in a geographical region,
- a form of cooperation between strongly interrelated companies/organizations.

The role of clusters (formed by SMEs) is highly appreciated. Their competitiveness and capability of fundraising are growing steadily. Therefore clustering is a key economic task for the European Union because the beneficial effects of clustering appear not only on micro level (EC, 2008a,b). Organizations such as the OECD (OECD, 2005a,b; 2007) and the UNIDO (UNIDO, 2005, 2007) also pay attention to fostering cluster policies.

In view of the above, it is not surprising that the management and organization of networks and regional clusters are also included in the curriculum of higher education institutions.

This lecture note is divided into five chapters.

The first chapter defines economic networks, their functions, relevance and the logical process of network establishment. (*This process is not identical with business networking – Translator's note*).

The second chapter defines regional clusters and gives a review of the possible types of clusters.

The third chapter presents the six-step process (assessment of conditions, defining goals, reserving organizational and operational conditions, controlling and maintaining operation) of establishing regional clusters.

The fourth chapter gives an overview about the experiences of one of Europe's most common form of clusters, the tourism clusters.

In order to facilitate the acquisition of knowledge at the end of the lecture notes a glossary is given to help the students.

In the last two decades several textbooks, studies and papers were published which can help those who are interested in clustering to solve practical problems (Porter, 1990, 1998, 2000; Brenner/Fornahl, 2003; Böhler/Dirk, 2008; Denner, 2007; Henn, 2006; Sautter, 2004; Schile, 2003; Scheuplein, 2006).

I wish the reader efficient work.

Miskolc, April 2013

The Author

1. Economic Networks

For almost two decades the terms of network and networking have been applied in the field of economics and regional development^{1/}.

This lecture note gives a review of the theoretical and practical questions of the management of business clusters. Economic networks and business clusters are not synonyms, although they have common attributes. For this reason it is worth defining them.

The literature of both topics is relevant and is steadily growing (however, the references at the end of the lecture note include only the works referred to) so these papers can give answers to further questions for those interested.

1.1 Definition of Economic Networks

Definition of networks, forms of networks, process of network establishment

The appearance of the definition of nets and networks is not the result of today's economic, social, scientific and political changes. Like other ideas, the definitions of networks have always changed and acquired a new meaning every now and again. The idea of network can be traced back to the Graph Theory,^{2/} later used in biology and physics^{3/}, finally entering into the public consciousness with information technology in the 1970s^{4/}.

^{1/} The most general definition of 'network' is applied to the structure of connected actors. The actors can be broadly interpreted as individuals, organizations, branches, settlements, regions, countries, etc. Their connections can be both formal and informal. (Norhia/Eccles, 1992. p.288.)

^{2/} According to the literature, the analysis of networks is connected to the German mathematician Leonhard Euler (Csányi/Szendrói, 2000). According to the story, Euler wanted to roam his hometown, Königsberg. The problem was to find a walk through the city that would cross each bridge once and only once. He reformulated the problem as a graph of points (as parts of the city) and lines (the bridges), which was the first abstract graph in history. With this graph he pointed out that there is no solution to this problem but with this method he also invented what is called the Eulerian path or Eulerian trail. Similar problems which can be easily interpreted by means of networks have a great significance nowadays also in different other disciplines. If we change the problem into its opposite, i.e. if we want to visit each vertex exactly once we get the Hamiltonian path. Several optimization problems can be transformed into what is called the travelling salesman problem. In this case the question is the following: Given a list of cities and the distances between each pair of cities, which is the shortest possible route that visits each city exactly once and returns to the original city?

^{3/} See e.g. works by Kertész/Vicsek (2006), Pongor (2005) and others.

^{4/} The idea of connecting computers in a network is as old as the vision of the integrated use of mass storage devices, databases and printers. The networks constructed by several dependent and independent elements to meet this need

The definition of networks claimed its place in the field of social sciences (such as sociology^{5/} and politics^{6/}) as well. The research goal of social sciences is to identify the rules and regularities of networks in order to describe and model different relations within society. One of the simplest models of networks is the grid (Figure 1.1.), where the actors are the points of the grids and connections are described by the arrows.

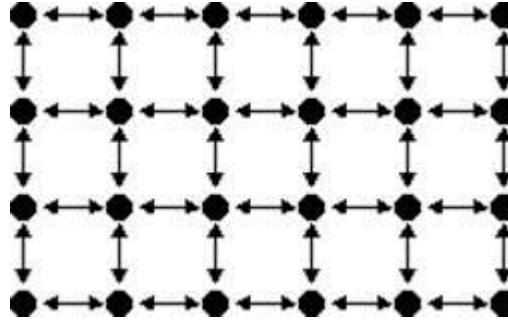


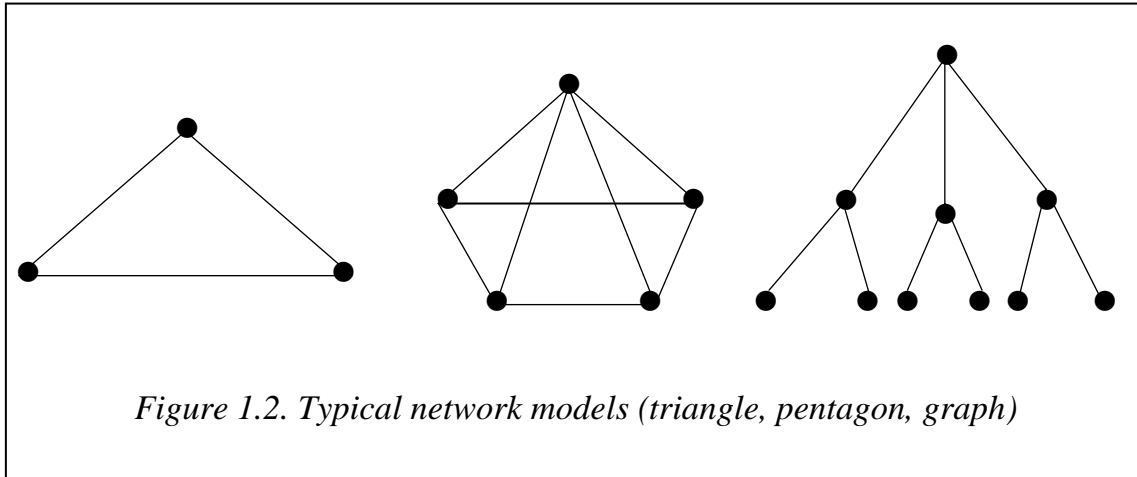
Figure 1.1. Grid structure

Just like social networks, business networks can be also presented by models of different actors (e.g. enterprises, companies, regions, countries) where the actors interact with each other to achieve a common goal. (Figure 1. 2.)

provides communication between the members, the common use of storages and peripherals, load balancing and an increase in security.

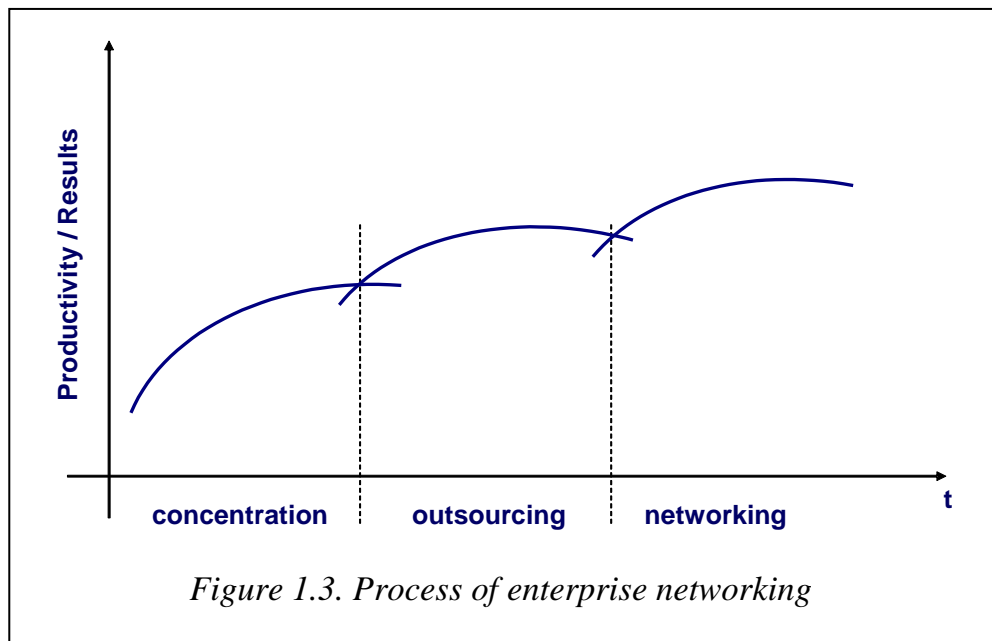
^{5/} Reviewing the international literature shows that the field of social networks has been one of the most dynamic and institutionalized fields of social research in the last two decades. "This tendency is proved by thousands of publications and the increasing number of researchers and co-operations in this field. The signs of institutionalization are the great number of conferences and symposia in this field, the growing literature, the methodology manuals, university courses and not least journals such as Social Networks or Connections." Tardos (1994) p.2.

^{6/} For details see e.g.: Barabási-Albert (2003), Csizmadia (2003), Czakó Á./Sík E. (2000).



The greatest support of networking effects is economic rationality (i.e. to increase productivity and profits and to lower the costs) and the different pressures.

The increase in company size (as proven by several research projects) has inhibited growth after a certain concentration. As a result, outsourcing processes have started, leading to a rise of new types of networks (of the parent company and the outsourced companies) (Figure 1.3.).

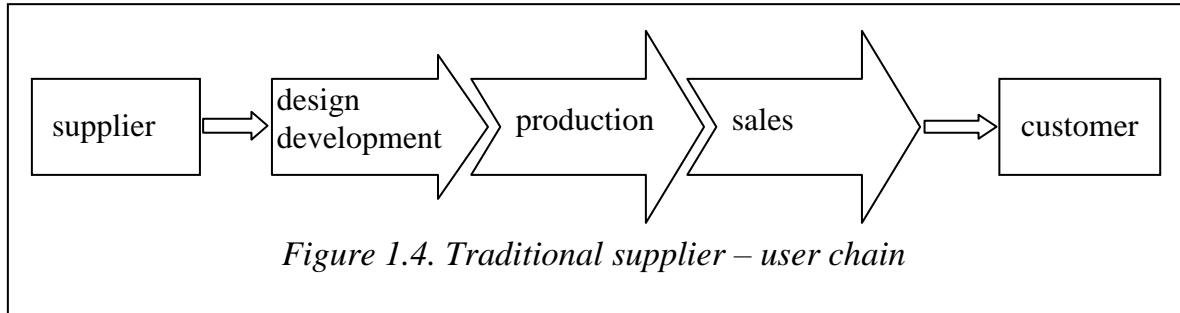


On the other hand, SMEs are forced to create networks in the competition for resources (knowledge, capital, information, etc.)

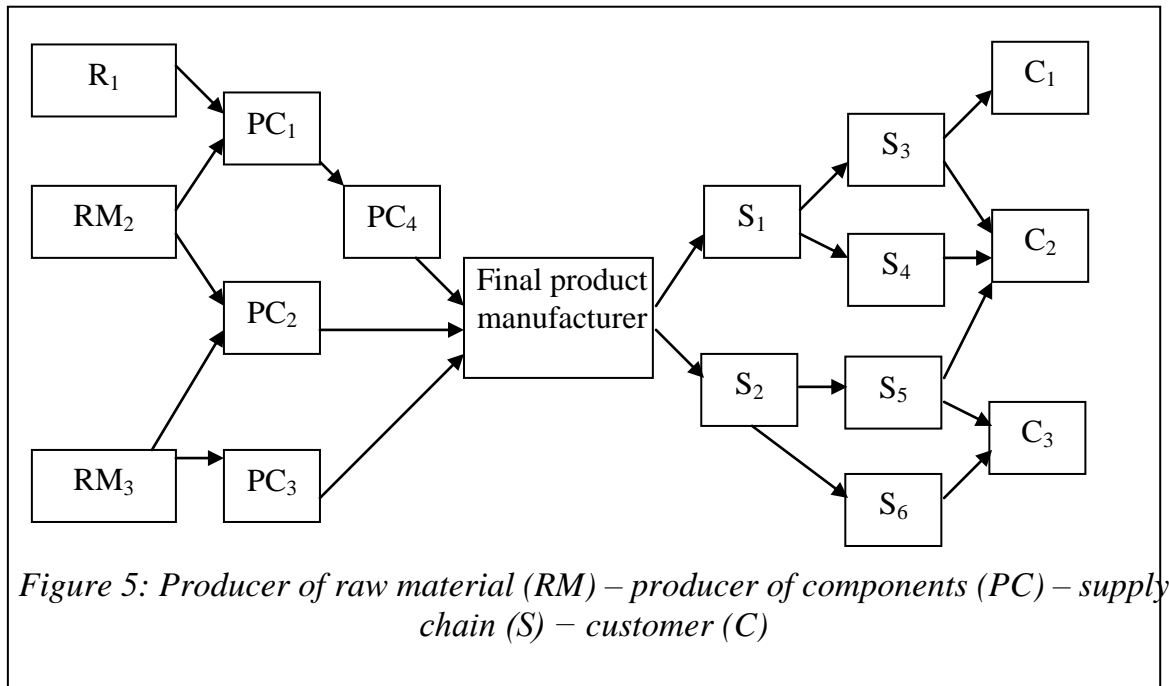
The establishment of economic networks is also influenced by:

- the socio-cultural environment of the actors of the economy^{7/},
- onsite conditions^{8/},
- economic policies (which can foster the establishment of innovation networks among SMEs)^{9/}.

Economic networks fundamentally change the relation of supplier-manufacturer and client (Figure 1.4.)



The new 'supplier-sales' connections are linked (Figure 1.5.)



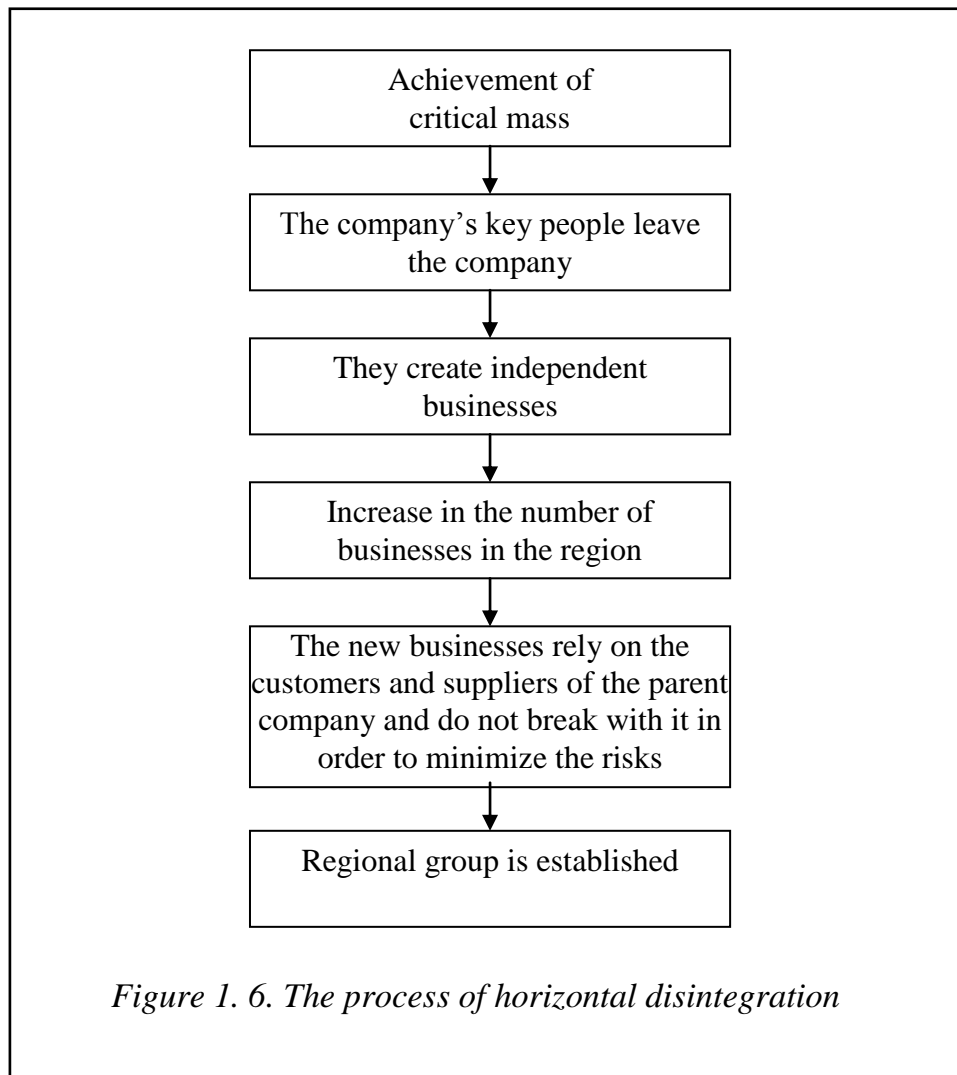
Regional networks can emerge as a result of horizontal disintegration. This is the result of the so-called 'spin-off' effect. During this process the key employees of the company quit to create their own businesses based on the experience gained in the parent company.

^{7/} See Patik (2004), Anderson/Jack (2002).

^{8/} See Bartke (1999).

^{9/} By means of regional economic policy programs, e.g. the Baross Gábor Program supporting the establishment of technology-development innovation networks, national programs, e.g. the Széchenyi Program facilitating the development of networks between SMEs, as well as EU programs, e.g. INTERREG III, etc.

In accordance with this process, the number of companies competing with each other in a region increases. The newly established enterprises rely to a great extent on the customers and suppliers of the parent company to minimize the operation risks. This process starts the establishing process of regional networks in a given industry in a region.



1.2 Functions of Economic Networks

Functions and benefits of networks

European Union member states handle the establishment of SME supply chains as a high priority objective of economic policies based on employment and competitive considerations. Network co-operations hold numerous benefits for the participants: e.g. concentration of resources, higher market weight and acknowledgment, higher and assured income, better bargaining position for procurement, better synergy effects.

Infrastructural elements facilitating the establishment of supplier networks can be:

- a system of supplier forums^{10/},
- consultancy organizations^{11/},
- supplier fairs^{12/},
- training programs on how to become a supplier,
- suppliers' competence centers.

Economic network establishment can be enhanced by preferential credit programs, non-repayable allowance and interest rate discounts.

The conscious management of supplier networks has a short history in Hungary. The first program was started in 1998^{13/}.

This kind of net (where the supply chain partners cooperate) is also called a vertical network (Gulati, 2001). These networks of dynamic cooperation between large companies and SMEs try to derive profits from their mutual complementation. This pattern is peculiar to the biotech industry, where huge chemical corporations (with capital and market power) join start-ups and small enterprises which are committed entrepreneurs and have experience in new research fields (Pecze, 2005).

^{10/} The primary goal of these forums is to answer questions about network establishment and to provide information about the subsidiary policies, tools and programs.

^{11/} In German domains more than 600 companies offer their services for networking. (September 2006)

^{12/} E.g. www.zuliefermesse.de; www.eszalltoipar.hu; www.industria.hu

^{13/} The program was managed by the Hungarian Enterprise Development Foundation (Magyar Vállalkozásfejlesztési Alapítvány)

Functions of networks

Regarding the functions of networks, we can differentiate supply, research, and distribution networks, which can form a graph ^{14/} (Helper, 1999).

Geographical location of network members

Considering the geographical aspects, we can distinguish regional and international networks. Regional networks are special forms of cooperation where local firms in different branches, governmental agencies, financial institutions, etc. work together for a common goal.

International networks can be described as cross-border corporate relations.

Three benefits of regional networks can be highlighted. The competitiveness of the members increases as they join the network. Due to specialization and division of labor, their productivity grows. Local companies have a local identity so they are linked to the local society so as to help solve local problems such as regional development or employment.

The distinctive features of regional networks are the physical proximity of the members, the same local cultural identity and the easiness of personal networking. The benefits of regional networks are include increasing regional competitiveness and economic performance^{15/}, improving local employment, using local resources, strengthening local identity and ensuring sustainability.

Regional networks can work in different forms depending on maturity and size of the network, but in almost every network we find final product manufacturers, special input suppliers, financial institutions and enterprises from related industries. Regional networks are the representatives of local key sectors and their competitive members manufacture exportable goods. The key industrial sector can consist of some global companies (as it happened in Detroit) but also of hundreds of SMEs (e.g. the furniture industry in Italy.)

Networks link themselves permanently to the local economy and do not move to other regions. They are embedded in the local society.

The headquarters of the major firms are located in the region; they make their decisions, prototypes and research in that area.

^{14/} An example of graph-form supply network can be examined in the automotive industry where at the top of the pyramid stands the manufacturer and the suppliers have a strategic relationship with the integrator of suppliers in the first line.

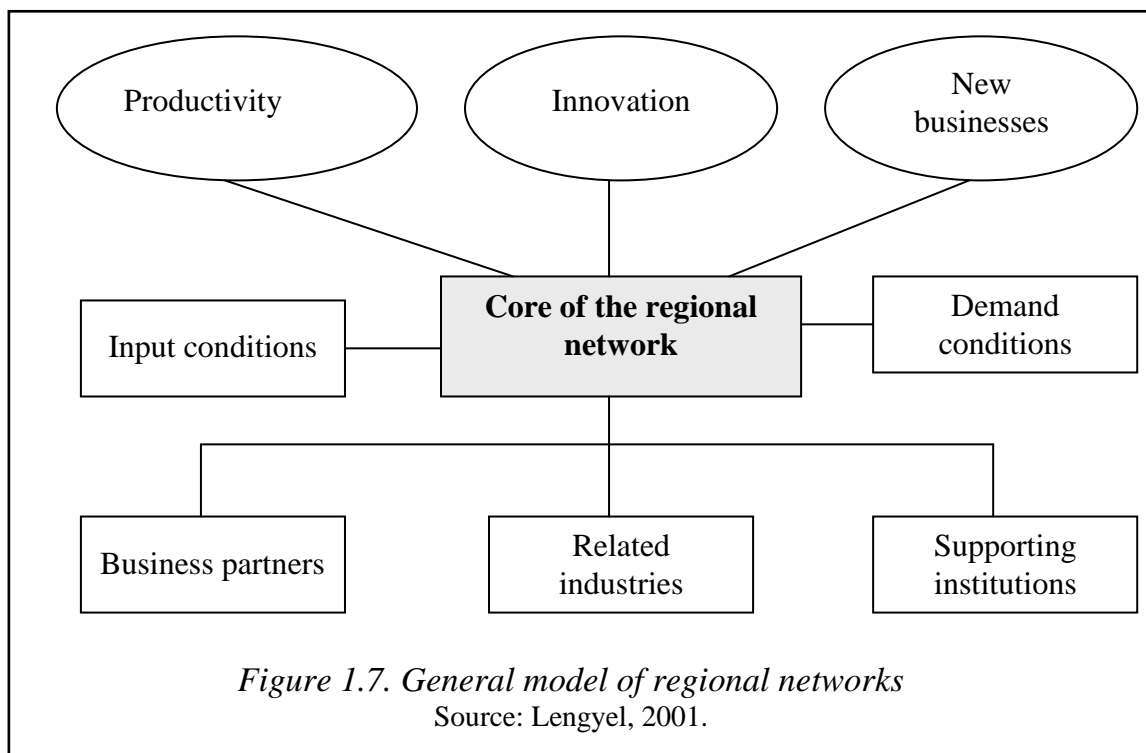
^{15/} See Braun (2004) p.5.; Poon (1990) p. 118.

The core of the model of regional networks is based on the competing companies and their networks (Figure 1.7.)

To establish and manage regional networks, three factors are needed in addition to the core:

- business partners,
- related industries,
- supporting and service provider institutions.

The network increases the productivity of the member companies and supports the innovation processes and the establishment of new enterprises in the region.



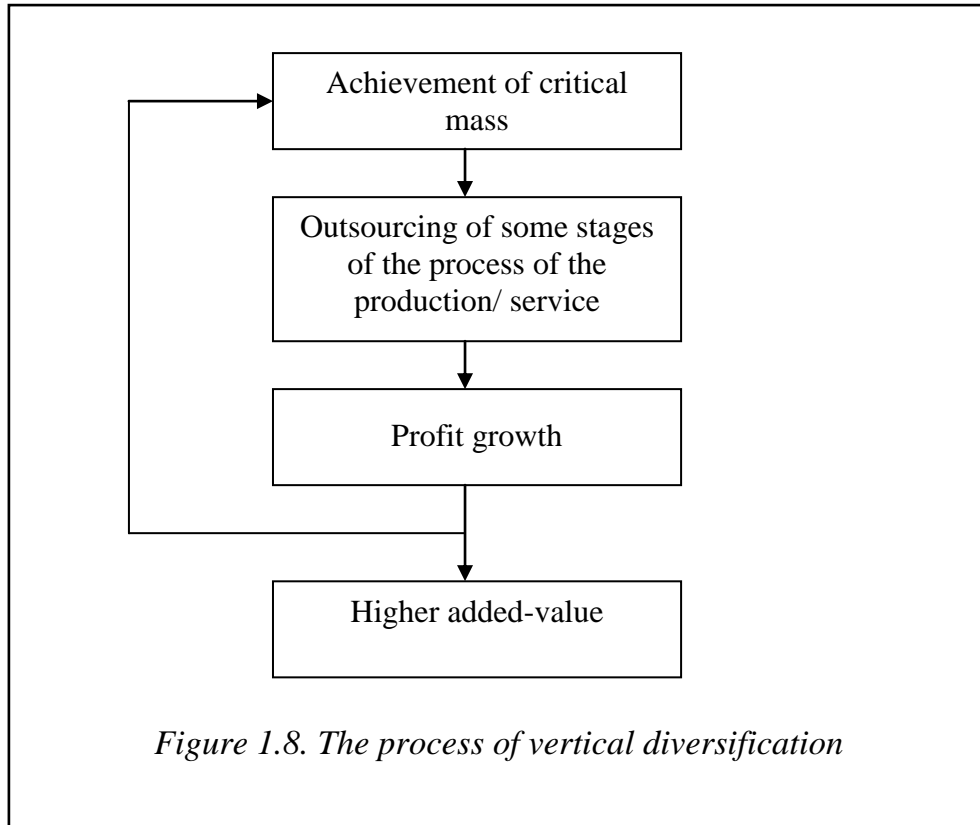
Every network embodies the links between the members which depend on the performance and evolution of the national economy, entrepreneurial traditions and governmental relations.

The different activities of different industries indicate different scales of economies and budget-cut options so there is no general 'recipe book' for establishing a network.

Regardless of what factors support the establishment of a network, the most important issue is to have a 'critical mass' of companies in the region and industry.

Basically two types of regional networks can be recognized the vertical and the horizontal forms.

The characteristics of vertical networks can be described as the way that one large company reaches the critical mass with the outsourcing activity to the supply chain. (Figure 1.8.)



1.3. Relevance of Economic Networks

Relevance of economic networks and their regional concentration

In the economies of developed countries the supplier industry carries a significant relevance^{16/}. Particularly, the automotive industry supplier has extra importance in Europe (Table 1.1.), but also globally (Table 1.2.) and in Eastern Europe (Table 1.3.)^{17/}.

Table 1.1.

^{16/} Supply partner search engines by branches on the websites of www.newtron.net (05 August 2006); building industry at: www.baulinks.de (05 August 2006).

^{17/} A study showed the distribution of German automotive industry suppliers (Mühge/Hertwig/Tackenberg (2003): less than 10 employees: 6.6 %; 10-49 employees: 60.4 %; 50-249 employees: 23.5 %; 250-499 employees: 4.4 %; 500-999 employees: 2.3 %; more than 1,000 employees: 2.9 %.

The ten largest German automotive suppliers (2006)

Rank	Company	Revenue from automotive supplies (billion Euros)
1.	Robert Bosch	23.2
2.	Continental	11.2
3.	ZF Friedrichshafen	7.8
4.	Thyssen Krupp Automotive	6.2
5.	Siemens VDO Automotive	5.7
6.	BASF	3.5
7.	Mahle	2.8
8.	Thyssen Krupp Steel-Group	2.6
9.	Bayer	2.4
10.	Rheinmetall	1.8

Source: www.automobil-produktion.de

The relevance and average weight of supplier networks are growing rapidly in the automotive and aerospace industries (Figure 1.9.)

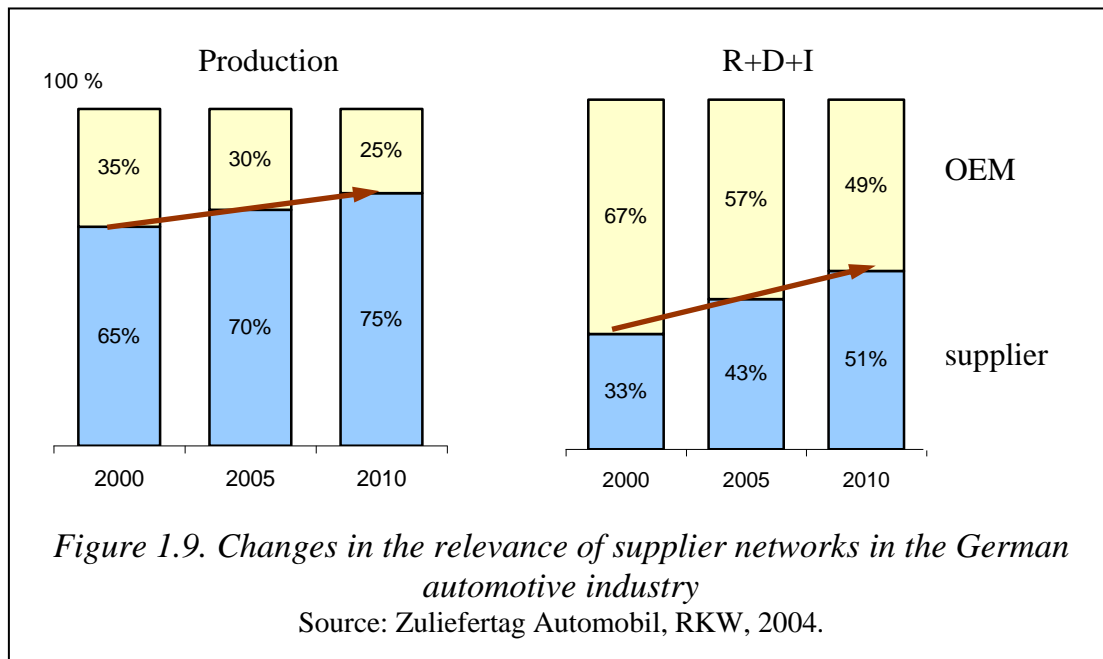


Table 1.2.

The fifty largest automotive suppliers of the world (2006)

Rank	Company	Country	Revenue from automotive supplies (billion Euros)
1.	Delphi Automotive Systems	USA	28.70
2.	Robert Bosch	D	23.20
3.	Visteon Automotive Systems	USA	19.58
4.	Denso	J	17.87
5.	Lear	USA	14.99
6.	Johnson Controls	USA	14.98
7.	Magna International	CDN	11.55
8.	Continental	D	11.20
9.	TRW	USA	11.12
10.	Faurecia	F	9.61
11.	Aisin Seiki	J	9.31
12.	Dana	USA	8.48
13.	Valeo	F	8.08
14.	ZF Friedrichshafen	D	7.80
15.	Yazaki	J	6.77
16.	Arvin Meritor	USA	6.37
17.	Thyssen Krupp Automotive	D	6.21
18.	DuPont	USA	5.72
19.	Siemens VDO Automotive	D	5.70
20.	Michelin	F	5.06
21.	GKN	GB	4.84
22.	Autoliv	S	4.39
23.	Magneti Marelli	I	4.17

Rank	Company	Country	Revenue from automotive supplies (billion Euros)
24.	Koyo Seiko	J	4.06
25.	Calsonic Kansei	J	4.00
26.	Bridgestone/Firestone	J	3.83
27.	Takata	J	3.63
28.	Goodyear Tire & Rubber	USA	3.56
29.	BASF	D	3.50
30.	American Axle & Manufacturing	USA	3.42
31.	Mitsubishi Electric Automotive	J	3.30
32.	Federal-Mogul	USA	3.26
33.	Ventures Industries	USA	3.03
34.	Borg-Warner Automotive	USA	2.92
35.	Honeywell	USA	2.86
36.	Hella	D	2.85
37.	Pirelli Reifen	I	2.83
38.	Mahle	D	2.80
39.	Eaton	USA	2.76
40.	Matsushita Electric Industrial	J	2.75
41.	Dura Automotive Systems	USA	2.72
42.	Tower Automotive	USA	2.71
43.	Tenneco automotive	USA	2.67
44.	Motorola	USA	2.56
45.	Toyota Gosei	J	2.54
46.	Bayer	D	2.40
47.	NSK	J	2.31
48.	Cummins Engine	USA	2.30
49.	Stanley Electric	J	2.26
50.	Behr	D	2.14

Source: www.automobil-produktion.de (10.08.2006)

Exchange rate: 1 USD = 1.10 Euro

Table 1.3.

The largest automotive suppliers in Eastern Europe

Name of supplier	Production site	Product	Automobile works
<i>Poland</i>			
Calsonic Kansei Poland	Ostrow Wielkopolski	car heating and cooling systems, air conditioning (AC)	Mitsubishi, GM, Suzuki, NedCar, Smart
Daicel Safety Systems Europe	Zarów	airbags, steam generators	
Denso Thermal Systems Polska	Tychy	air conditioning	Fiat
NGK Ceramics Polska	Gleiwitz	filters	especially for German car manufacturers
NSIK Steering Systems Europe (Polska)	Walbrzych	steering columns	
Sanden Manufacturing Poland	Polkowice	AC compressors	
SEWS Polska	Leszno, Rawicz	wire harnesses	Toyota (in F, GB, TR), Opel, Honda
SEWS Components Europe Polska	Leszno	components	SEWS (Toyota, BMW)
Takata-Petri	Walbrzych	steering wheels	BMW, Audi, Honda, Opel, DaimlerChrysler
Takata-Petri Parts Polska	Krzeszów	seat belts	Saab, Opel, Mercedes
TBMeca Poland	Legnica	oil filters, air filters, water conduits	Toyota
TRI (Poland)	Wolbrom	rubber parts	Toyota (F, GB, TR), TPCA
<i>Slovakia</i>			
SEWS Slovakia	Topolčany	harnesses	Nissan GB, Nissan E
Sluzba Slix Electronics	Nitra	lightning components	Sluzba VD
Trim Leader	Koč any nad Turcom	seats	Johnson Controls
Yazaki Slovakia	Prievidza	harnesses	Ford, Nedcar
<i>Czech Republic</i>			
AIRS Manufacturing Czech	Liberec	AC components	Denso CZ, Denso UK, Denso TR
Aisan Bitron Czech	Luny	fuel pumps	Fiat, AvtoVAZ, Magnetti Marelli, Toyota
Aisan Bitron Louny	Louny	covers	Toyota, Renault, Denso

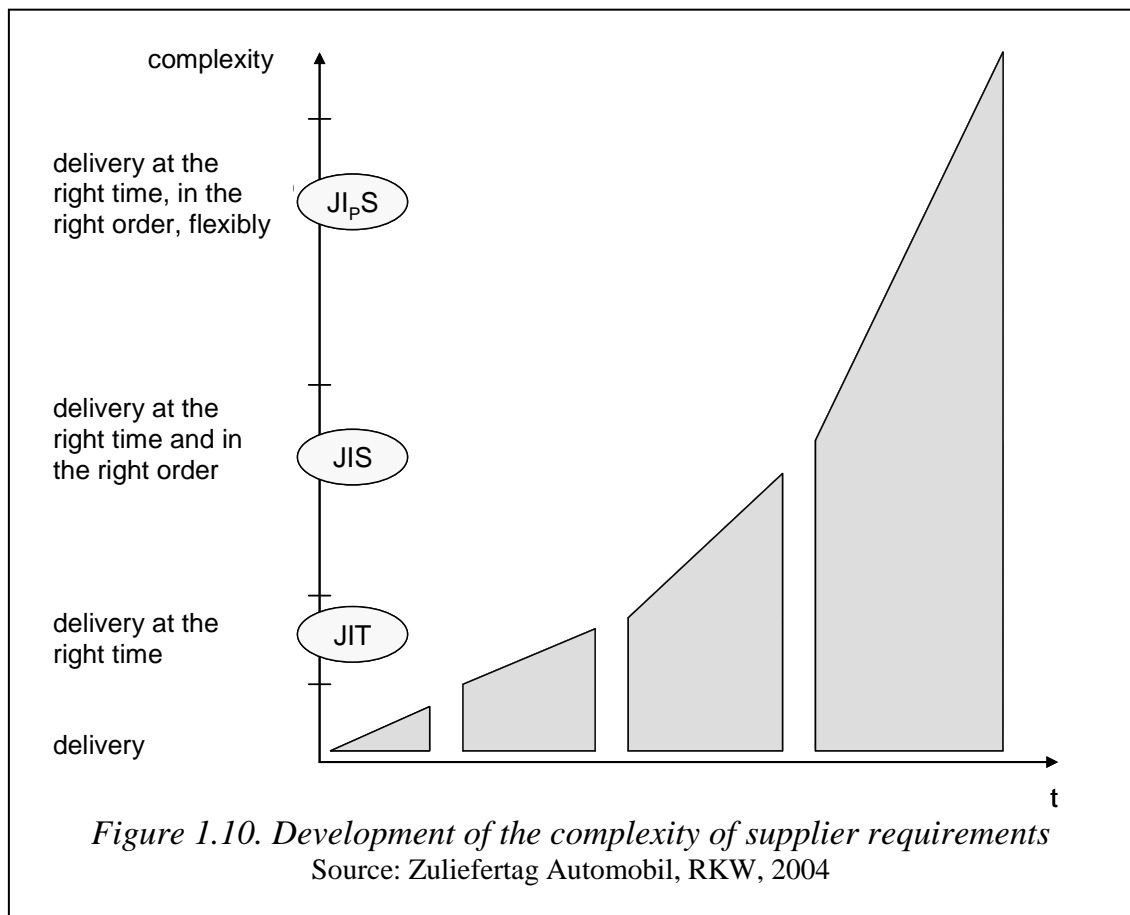
Name of supplier	Production site	Product	Automobile works
Aisin Europe Manufacturing Czech	Pisek	water and oil pumps	Toyota, Renault, Volvo, Nissan
ASMO Czech	Zruč nad Sázavou	window motors	Toyota
Denso Manufacturing Czech	Liberec	complete AC equipment and components	VW, Audi, BMW, Nedca, TPCA, Suzuki
Electric Powersteering Components Europe	Slaný	power steering	Peugeot, Nissan, Suzuki, Volvo, Renault, etc.
Fuji Koyo Czech	Pilsen	metal columns of steers	Koyo Steering Systems Czech
Fujikoki Czech	Louny	AC components	Valeo, Denso, etc.
Futaba Czech	Havlíčkův Brod	mufflers and exhaust pipes	TPCA; Magyar Suzuki
Indet Safety Systems	Vsetín	airbags, gas generators	TRW, Nippon Kayaku, Autoliv, TRCZ
Istimitsu Manufacturing Czech	Louny	washers and screws	Aisan Bitron Louny, Denso Manuf., Hungary
Kayaba Manufacturing Czech	Padrubice	shock absorbers	
Koito Czech	Žatec	headlights	Renault, Land Rover, Porsche
Koyo Steering Systems Czech	Pilsen	steering components	TPCA
Liplastec	Liberec	plastic items	Denso
Mitsubishi Electric Automotive Czech	Slaný	generators	
Nichias Czech	Mikulov	crankshafts	different Japanese companies in Europe
Showa Aluminium Czech	Kladno	capacitors	VW, Skoda, Saab, Valmet, Magyar Suzuki, Opel
Sumikei Czech	Benátky nad Jizerou	aluminum profiles	Denso
Takata Industries Czech Republic	Louny	plastic items	TRCZ
Takata-Petri Parts	Dolní Kalná Rtněv	airbags	Ford, GM, DaimlerChrysler
TG Safety Systems Czech	Kláštrec nad Ohň	airbags	Honda, Magyar Suzuki, Nedcar, Opel, Toyota GB, Toyota TR, IPCA

Toyota Koki automotive Czech	Pardubice	gearbox components	Toyota Pl
TRCZ	Lovasice	switches, seat belts, window sensors	Toyota, TPCA, Magyar Suzuki, Ford, Nissan, Volvo
TRIS Czech	Lovasice	brushes	Aisan Bitron Czech, Denso Manufacturing Italy
Visteon-Nichirin Czech	Rychvald	AC components	Visteon
Yazaki Wiring Technologies Czech	Pilsen	harnesses	
Hungary			
AGC Automotive Hungary	Tatabánya	glass	
Delphi-Calsonic Hungary Manufacturing	Balassagyarmat	capacitors	Renault, GM
Denso	Székesfehérvár	injection systems	Ford, Isuzu, Toyota
Diamond Electric Hungary	Esztergom	ignition	Magyar Suzuki, Maruti, Indomobil Suzuki, MDC Power Kölleda
Euro-Exedy	Tatabánya	clutches	Magyar Suzuki, Opel
Ibiden Hungary	Dunavarsány	filters	
Mitsuba Automotive Systems of Europe	Salgótarján	window washer systems	Honda, Ford, Magyar Suzuki
Musashi Hungary Manufacturing	Ercsi	ballbearing steering systems	Audi, Fiat Polska Powertrain, Honda (Motorräder), MDC Power Kölleda, Koyo Seiki
SEWS AWH	Kisbér-Ercsi	cables	SEWS
SEWS Components Europe Hungary	Mór	harness components	SEWS
SEWS Hungary	Mór	harnesses	Magyar Suzuki
Stanley Electric Hungary	Gyöngyös	headlights	Mazda, Magyar Suzuki, Toyota
U-Shin Europe	Kisbér	keys, door handles	Opel, Magyar Suzuki

Source: www.automobil-produktion.de/themen/04466/druckversion.php (10.09.2006)

The Boeing Company founded in 1916 has one of the largest supply networks in the world (Founder William Boeing employed suppliers for the engines). The relevance of Boeing's supply network can be represented by the 5,400 suppliers from six continents employing more than 500,000 people. Approximately 75 % of the components are provided by the suppliers to the company, which had a 28 billion USD turnover in 2012.

Supply networks influence the development of manufacturing and logistics systems to a great extent as well (Figure 1.10.)



1.4. Logical Process of Network Establishment

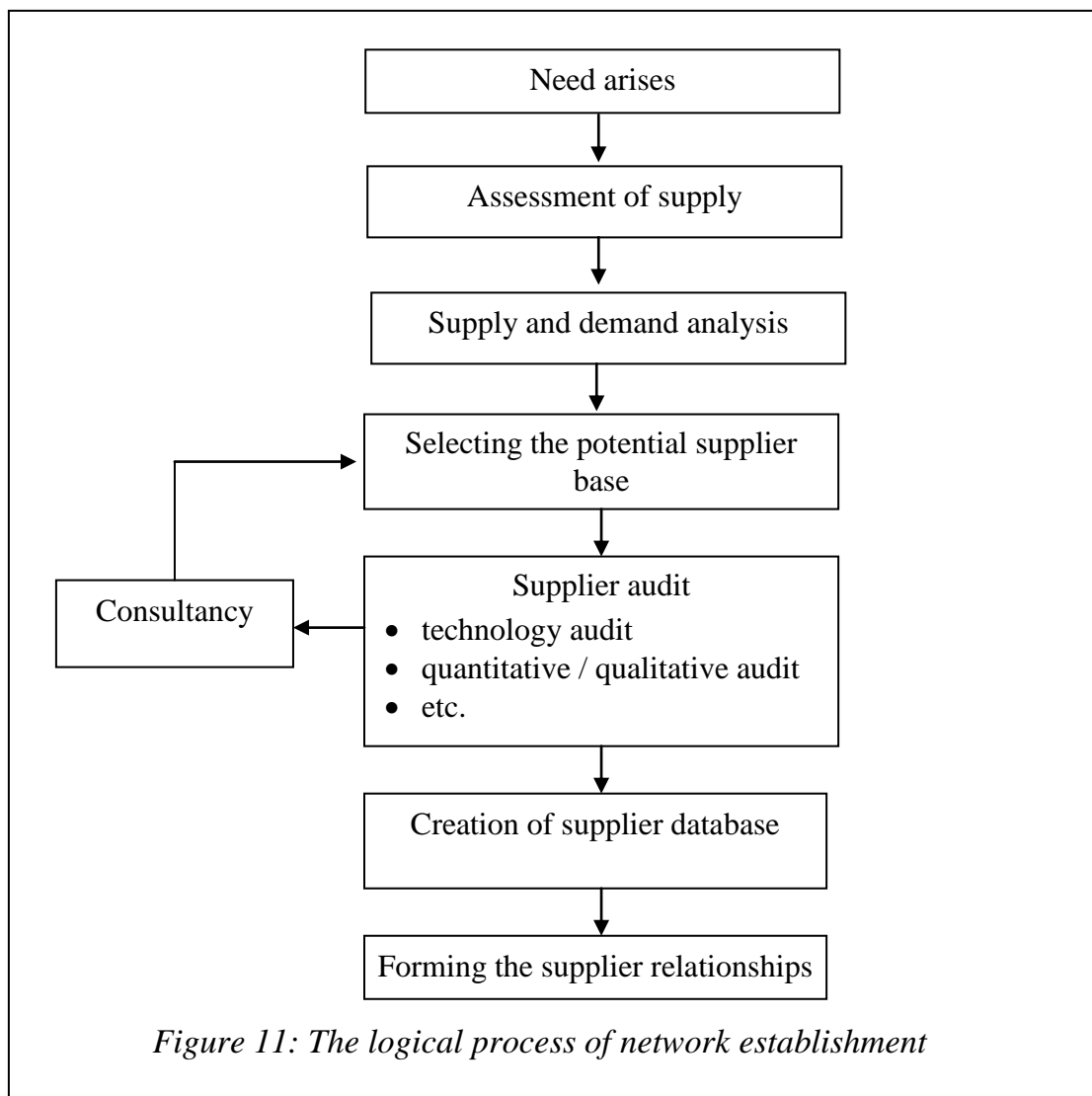
Network establishment can be initiated by the potential members, government policies and by large corporations.

In the case of bottom-up initiatives the enterprises acknowledge the benefits of the network and start this form of cooperation.

Top-down initiatives are governed by the economic policies for network establishment among the entrepreneurs.

Large corporations are inspired by cost-saving, productivity and effective growth to establish a network.

The process of network establishment starts with the appearance of the need to cooperate and ends by a formalization of supplier relations. This process has several steps and occasionally can be time- and money-consuming (Figure 1.11.)



- Analyzing the regional entrepreneurial structure

Regional network establishment starts with an analysis of the entrepreneurial structure which examines:

- the distribution of enterprises, the structure of enterprises, their capital, technology and staff,

- the regional distribution of resources around the manufacturing site,
- development trends in the industry.

The resources among many other factors include the logistics conditions as well.

- Analyzing the demand and supply side

To create a potential supplier database, it is necessary to collect the demands and to analyse the co-operational capabilities.

Demands

Demands are formulated by the suppliers usually by general expectations about quantity and technology. These demands will be refined in further steps with regard to strategic considerations.

Understanding the demand and supply sides starts with the first step of surveying the potential stakeholders (Tables 1.4. and 1.5.)

- Supplier audit

The role of supplier audit is to choose a circle of companies which are able to provide goods and services in the requested quantity in the requested quality in the long-term. A supplier audit usually consists of three steps: prequalification, regular audit and feedback.

a) *Prequalification*. Prequalification is performed in order to analyze the partner's professional performance and financial situation.

Prequalification is made through questionnaires which are sent from the buyers to the potential suppliers. If additional information is needed, site visits, supply samples and demonstrations can be used.

b) Regular audit. The buyers check regularly the prices (price level, contents of prices, billing reliability, etc.), the quality (health, environmental and safety aspects, material quality, ISO certification^{18/}, etc.) and the delivery (deadlines, packaging requirements, etc.) of the supplier.

c) Feedback. The buyer sends feedback to the supplier about the experience and consequences of the audit and also classifies the supplier (excellent, good, acceptable, banned, etc.).

A supplier can be banned if:

- the average rating is less than 50 % of the maximum requirements,
- the supplier does not fulfill specific legal or technical conditions or hold certifications,
- the supplier does not meet the requirements in three consecutive audits,
- the reliability of the supplier is doubtful (due bankruptcy, litigation, crimes, etc.),
- usurps the environmental, governmental, safety, health or security rights or regulations,
- the buyers' interests are seriously offended, impairs the reputation or the suppliers commits a serious breach of contract.

Review questions

1. What is a network?
2. What is an economic network?
3. What are the functions of economic networks?
4. How can economic networks be established?
5. What are the functions of supplier forums?

^{18/} ISO 9001: 2000 Quality Management System; ISO 14001 Environmental Management System; ISOTS 16949, QS 9000, VDA6 Automotive Supplier Requirements; AQAP 110/120 NATO-supplier requirements; ISO 13485 Special additional requirements for medical sector; BS7799/ISO 17799 Information Security System Management; ISO/IEC 17025:2001 Standard for testing and calibration laboratories; HACCP Food safety regulations.

6. What kind of advantages could a regional supplier network have?
7. What is the role of diversification in the establishment of networks?
8. In which industries do supplier networks possess a significantly high relevance and why?
9. What is the purpose of a supplier audit?

2. Business Clusters

Definition, establishment, functions, typology and relevance of regional clusters

Nearly forty years ago a new idea appeared and – apart from some differences in interpretation – the generally accepted definition of Porter (1999) can be stated as follows: Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers and associated institutions in a particular field that are present in a nation or region.

According to a survey in 2003, the number of regional clusters in Western Europe and the USA is about 4,000. This means that the relevance of regional clusters is high in macro-, mezzo- or micro-economical terms. The competitiveness of clustered SMEs is significant, regions with business clusters have higher economical potentials (Rosenfeld, 1997) and local employment grows in those regions (Storper/Scott, 1995; Asheim/Isaksen, 1997).

The first cluster organizations in Western Europe were established in England in the 1970s. Due to the supportive policies of the European Union member states, the establishment of business clusters dramatically increased in the 1980s and 1990s. The greatest effects on clustering were the market pressures and the conscious economic policies. The first (1972) and second (1978) oil crisis resulted in an increase in the market weight of MNCs (multinational companies) and INCs (international companies) while the market position of SMEs declined. The only chance to survive was to create clusters of companies. On the other hand, the diminishing competitiveness of SMEs would exert negative effects on the European Economic Community. Numerous enterprises would have gone bankrupt so it is obvious why cluster policies are part of the structural and regional policies in many member states.

These two effects (pressures and support) encouraged the potential partners around Europe and nowadays there is no EU member state without more or less business clusters (Table 2.1.)

Organizational networks of cooperating enterprises created along a value chain in a geographically defined area are termed a cluster.

Table 2.1.
Typical cluster industries of some European countries (2004)

Industry Country	timber industry	car industry	aerospace industry	plastics industry	tourism	medical and health tourism	software, IT	multimedia, communications	textile industry	biotechnology	heavy industry	environmental protection	financial services
Austria	X	X			X	X				X		X	
UK			X		X				X	X		X	X
Belgium				X				X					
Denmark								X					
Finland							X	X			X		
France						X			X	X	X		
Netherlands													X
Greece												X	
Ireland							X	X			X		
Germany		X		X		X	X	X		X	X	X	
Portugal		X			X								
Spain		X		X	X			X					
Italy	X				X	X			X	X		X	X
Sweden								X		X			

Source: Kocziszky (2004)

As it is demonstrated by a sample survey (EC, 2002), the industries which are highly suitable for clustering are already defined. These clusters are connected to a specific branch (e.g. timber industry, heavy industry, etc.), product (e.g. automobiles), tasks (environmental safety) or technology (e.g. biotechnology).

In the practice of the EU subsidy system the support of business clusters has become an integrated part of the economic (Anlanger, 2002) and regional policies (Porter 2000).

The reason is that clusters contribute greatly to the economic potential of growth on all the levels of economy (micro, mezzo and macro) (Table 2.2.)

Besides the market pressures and the political support, the expansion of the New Economy (especially ITC development) has a great impact on clustering (Harrison, 1994). Industries competing globally need lean and flexible supply chains for their operations.

Table 2.2.

Benefits of clustering (Kocziszky, 2004)

On macro level	On meso level	On micro level
<ul style="list-style-type: none"> • Contributes to the subsistence and strengthening of the (mostly national) SMEs. • Supports the reception of technology transfer and innovation. 	<ul style="list-style-type: none"> • Improvement of the employment and decline in the unemployment rate in the region. • The cluster provides work for the region's laboratories and institutions of higher education. • Stabilizes the situation of micro-, small- and medium-sized enterprises that collaborate in the cluster. • Contributes to the region's competitiveness and helps to improve its image. 	<ul style="list-style-type: none"> • The market size of the enterprise can be increased. The market potential of the members of the cluster increases when they enter the cluster. • The flow of professional information becomes more direct and faster, duplications can be avoided. • The company's capacity and ability to innovation grows. • The reputation of small companies can be increased. • The suppliers' prospects are improved by the expansion of the product range.

According to surveys, the competitiveness of companies increases when they enter a cluster (Bartl/Eder/Scheer/Trippl 1997. p. 6.).

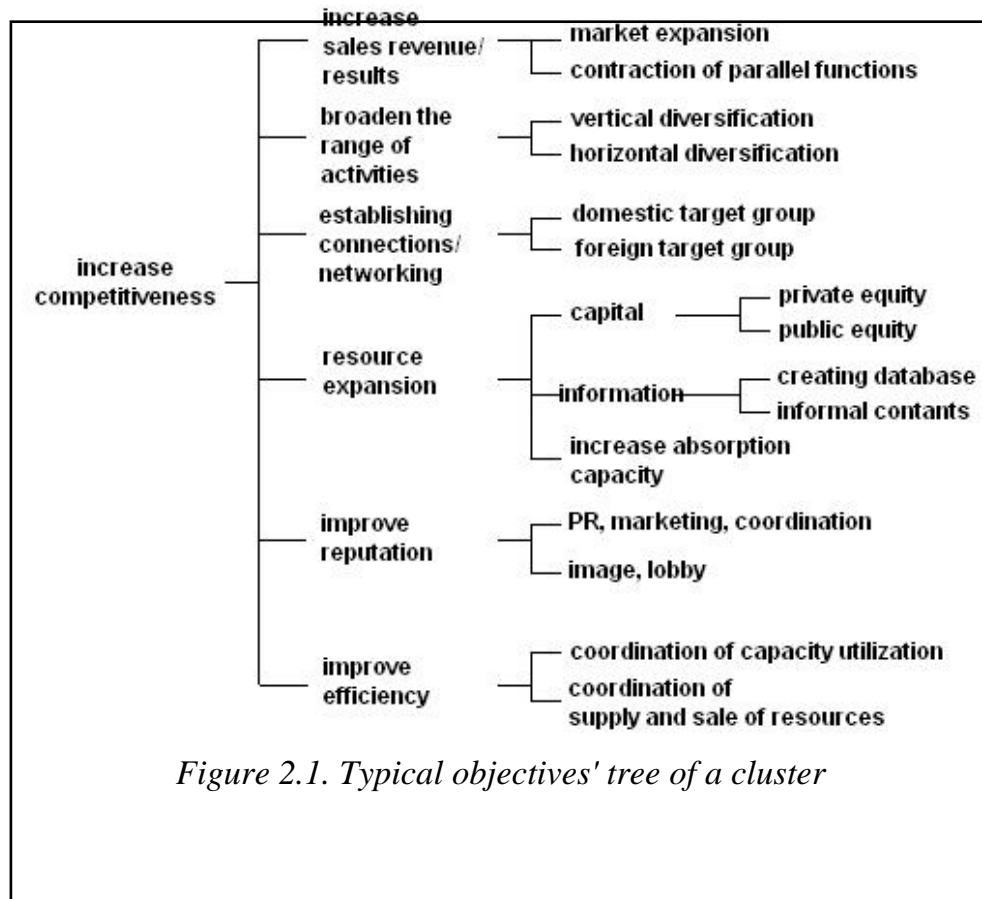
2.1. Typology of Business Clusters

According to practical experience, clusters can be categorized around 9 criteria (Table 2.3.)

Table 2.3.

Cluster typology	
Goal	<ul style="list-style-type: none"> • Turnover/Profit improvement, expanding the scope of activities • Networking • Enlarging the resource base • Improving awareness and recognition • Improving efficiency
Potential partners	<ul style="list-style-type: none"> • Governmental institutions • Financial institutions • Educational institutions • Chambers, associations and consulting organizations
Legal form	<ul style="list-style-type: none"> • Separate legal status • No separate legal status
Profile	<ul style="list-style-type: none"> • Traditional (manufacturing, service industry) • Innovative
Organization	<ul style="list-style-type: none"> • Independent organization • Virtual organization
Function	<ul style="list-style-type: none"> • Intra-cluster coordination • Extra-cluster coordination
Number of cluster members	<ul style="list-style-type: none"> • < 50 • 50-200 • 200-500 • 500-1000 • >1000
Size of members	<ul style="list-style-type: none"> • Micro • Small • Medium
Geographical concentration	<ul style="list-style-type: none"> • National • Regional

a) *The goal of clusters* is to enhance the competitiveness of the members through better market positions and more efficient operations. To do so, clusters rationalize the processes of the members (coordination of tasks and concentration of functions) and improve their image (Figure 2.1.)



b) Partners: Although cluster members work in the same industry, their partnerships are diverse. The diversity of professional and financial interests gives the extra value that cooperatives cannot.

Diverse partnerships have several benefits such as:

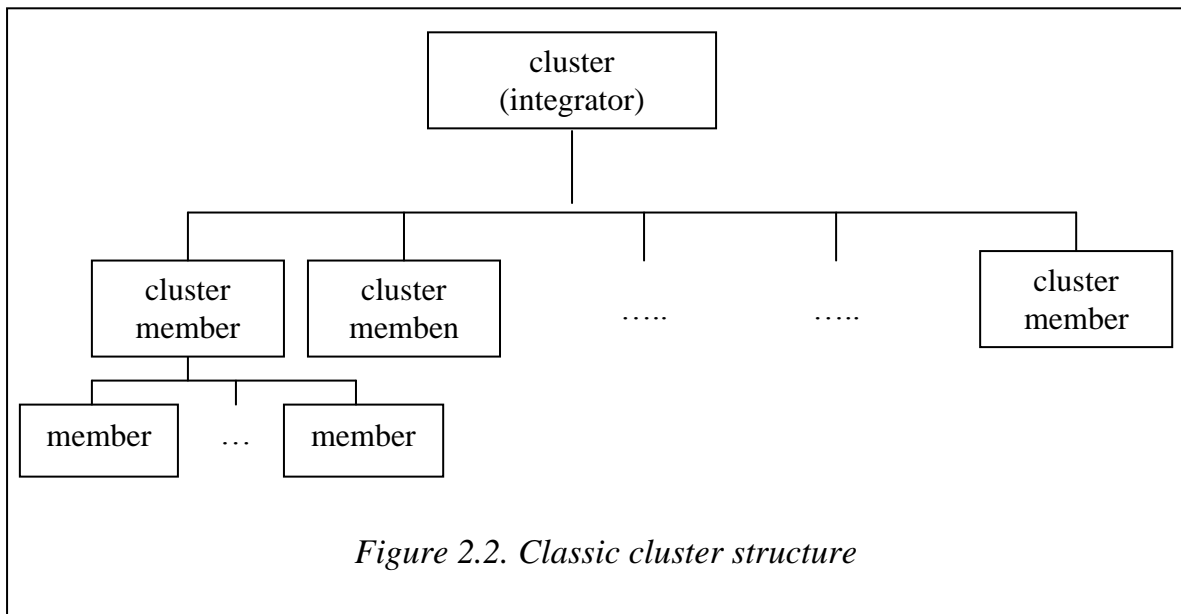
- eliminating the danger of breakdowns and operational crises;
- providing opportunity for the complementary members to ensure a more efficient management (common R+D, PR, marketing, accounting and financial management).

Beyond the companies which create and add value in the network, the involvement of organizations (such as trade unions) providing special services also stands to reason. Empirical studies proved that governmental institutions and universities can also join the work of a network (Porter [1998]).

As shown by some experience, pressure groups and consulting organizations can also cooperate in the cluster. (Safeguarding organizations (as labor unions, trade unions and consumer protection agencies) associated with the operation of the cluster manage the questions of employees, owners and clients, while professional chambers provide connections to the national and international markets.)

Besides creating connections with the professional field, networking with governmental institutions is also relevant. The institutions concerned can also be involved in the cluster's operation. Local and regional governments, development agencies and voluntary organizations are potential participants of regional cluster development cooperation.

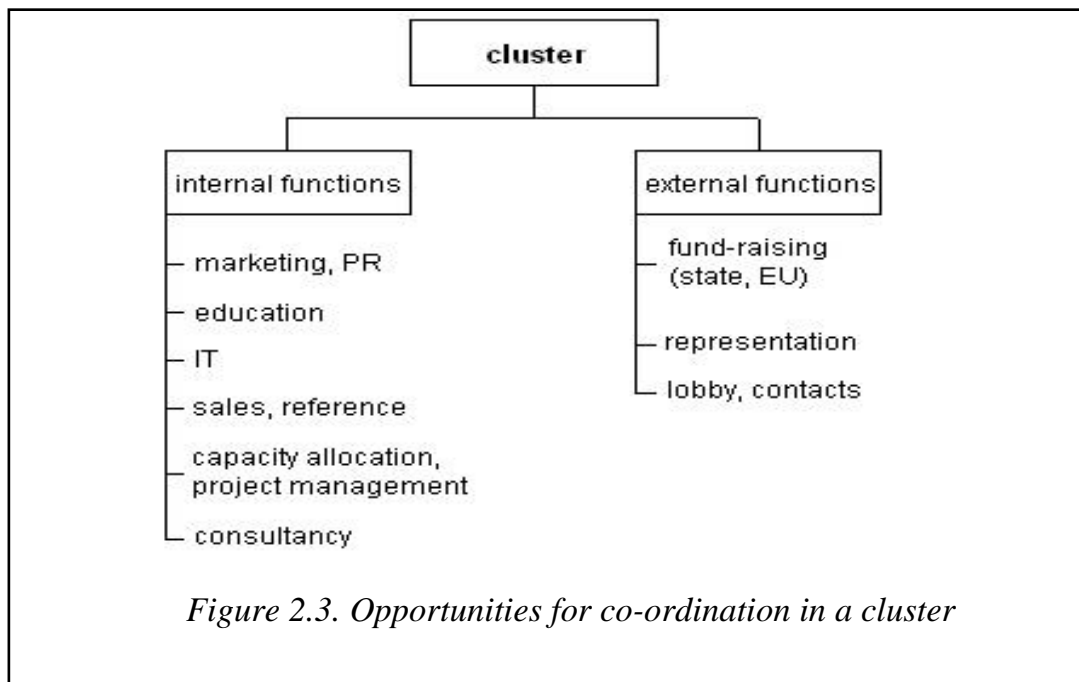
c) Legal form: The majority of clusters (as shown by international practice) have a separate legal form and the members join this new entity (Figure 2.2.)



d) Profile: The greatest changes in the life of clusters occurred in their profiles. In the early years mostly production or technological (so called traditional) profiles were dominant, nowadays the R+D characteristics are coming into prominence.

In the literature (e.g. Harrison [1994]) the cause of the acceleration of clustering process is give as the boom of the ITC sector and the New Economy. The reason is that the new industries competing globally need lean and flexible supply chains for their operation.

e) Organization: The managerial task of the cluster is usually performed by a small (integrator) organization. In the early phase one of the member companies can also do it for extra payment. Partners joining the integrator can also gather new members (Figure 2.3.)



f) Function: The integrator can undertake tasks that were never done by the members or were done less efficiently. Traditional functions of the clusters are summarized in Table 2.4. These are gathering and providing information, marketing tasks, education and training, technology and knowledge transfer, business incubation, sales and project management.

g) Number of cluster members: Due to the fact that the majority of cluster members are SMEs, the number of cluster members is relatively high. According to a survey, the average number of cluster members is approximately one hundred. [EC, 2002] Although the literature returns to the question of optimal cluster size, there is no agreement among the authors (Rosenfeld [1997]).

Table 2.4.

List of cluster functions

Function	
Information provision	<p><i>It provides information for the members of the cluster about ...:</i></p> <ul style="list-style-type: none"> • competitors, • market (domestic, international), • fund-raising potentials, • products, services, • customers, suppliers • active projects. <p><i>It provides information for others about...:</i></p> <ul style="list-style-type: none"> • the cluster's activities and business results.
Non profit / business services marketing	<ul style="list-style-type: none"> • cluster/ cluster's services • improving the reputation • market research • workshops • press review • lobbying • strengthening cluster awareness • analyzing the development of the cluster
Education /training	<ul style="list-style-type: none"> • advanced technological trainings • management knowledge • project management knowledge
Knowledge / technology transfer	<ul style="list-style-type: none"> • contributing to the proliferation of new technologies and knowledge
Providing incubator services	<ul style="list-style-type: none"> • help in fund-raising • administrative assistance • providing production site and infrastructure
Organization of meetings	<ul style="list-style-type: none"> • organizing events • organizing study trips • introduction of cluster members • organizing workshops
Project management	<ul style="list-style-type: none"> • writing tenders/applications/proposals • generating projects • coordination of projects • co-operation in projects

It is generally accepted that a cluster must reach the 'critical mass' of members to achieve higher competitiveness. The economic weight of clusters is well represented by the fact that 70 % of patents in European biotechnology research between 1987 and 1997 were registered by cluster members (EC [2002]).

h) Size of members: Usually SMEs are the members of clusters because it is in their interest to achieve better performance due to a virtual increase of company size (Table 2.5.)

Table 2.5.

Criteria for SMEs in Hungary and the European Union

		Number of employees		Turnover (million €)	Net sales (million HUF)	Total assets (million HUF and €)	
		HUN	EU*	EU*	HUN.	HUN.	EU*
Micro-	Enterprises	1-9	1-9	n.d.	n.d.	n.d.	n.d.
Small		10-49	10-49	7	700	5	500
Medium		50-249	50-249	40	4000	27	2700

* Source: Report 2002: SMEs in Europe, including a first glance at EU candidate countries.

i) Geographical concentration: Clusters can operate in regional and international fields (Table 2.6.) Obviously, a regional cluster can evolve into a national or international cluster.

Table 2.6.

Cluster types by geographical concentration

Members' business relations Scale of geographical concentration	Loose	Tight
	Macro-cluster based on institutions	Network based on industrial macro-cluster
National/International		
Regional	Regional network of service centers	Regional industrial cluster

Source: Lengyel [2000]

Review questions

- What are vertical and horizontal clusters like?
- What kind of functions can a regional cluster have?
- What kind of benefits can a regional cluster have?
- What are the effects of regional clusters on employment?

3. Establishing Regional Clusters I

Logical process of cluster establishment, task list

The clustering process and operation can be divided into 7 steps as follows (Figure 3.1.):

- initiatives, analyzing conditions,
- defining cluster goals,
- forming the organizational and operational model of the cluster,
- analyzing effects, decision-making,
- finalizing cluster documentation,
- start-up cluster,
- progressive development.

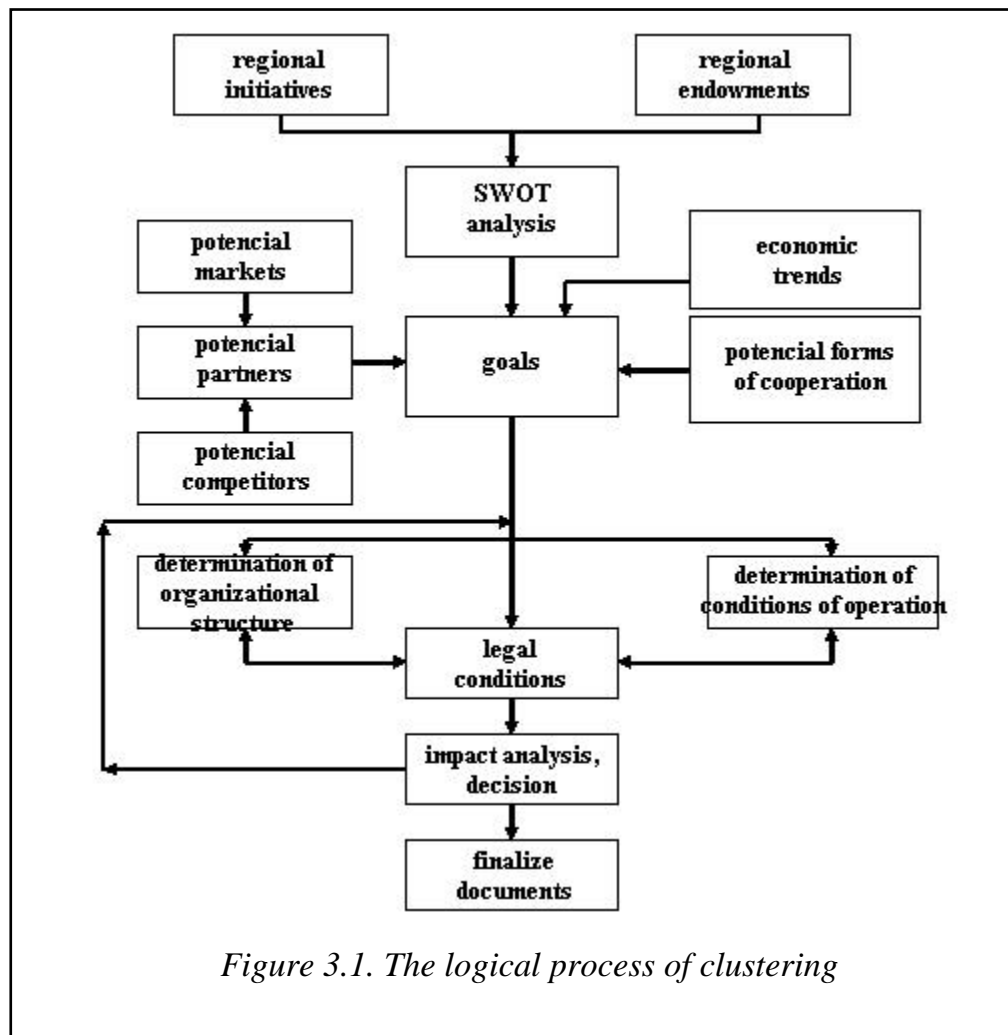


Table 3.1.

Task list of clustering

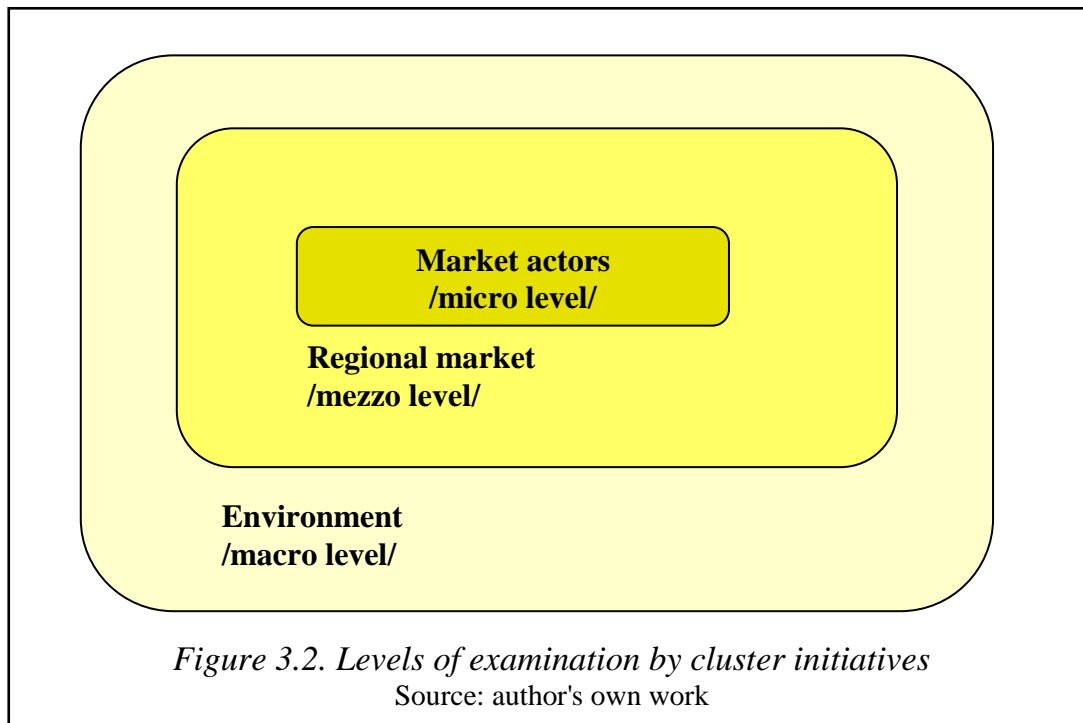
Phase	Activity	Task
1. Analyzing conditions	1.1 On-site analysis	<ul style="list-style-type: none"> • Site conditions • Examining the entrepreneurial and corporate culture
	1.2 Market and infrastructure analysis	<ul style="list-style-type: none"> • Market analysis • Competitor analysis • Infrastructure analysis • Geographical and cultural analysis • Supplier analysis
2. Defining cluster goals	2.1 SWOT analysis	<ul style="list-style-type: none"> • Choosing indicators • Defining sources of data • Questionnaire survey • Data processing
	2.2 Defining the core activities of the cluster	<ul style="list-style-type: none"> • Defining partners
	2.3 Involving cluster stakeholders	<ul style="list-style-type: none"> • Business federations • Civil organizations • Local authorities
	2.4 Defining the goal of cooperation	<ul style="list-style-type: none"> • Production and service goals • Supply system goals • Sales goals • Database goals • Development cooperation goals
3. Forming the organizational and operational model of the cluster	3.1 Assessment for creating a separate cluster management organization	<ul style="list-style-type: none"> • Defining tasks in the cluster • Fixing priorities • Assessing resource demand • Forming a budget • Refining schedules • Defining monitoring tasks
	3.2 Forming the co-operation and decision-making rules for the cluster partners	<ul style="list-style-type: none"> • Cluster code
	3.3 Creating business plans	<ul style="list-style-type: none"> • Business plan for min. 3 years
	3.4 Assessment for an integrated cluster management organization	<ul style="list-style-type: none"> • Selecting the coordinator • Defining coordinator rights and obligations • Ensuring coordination and funds

Phase	Activity	Task
4. Analyzing effects, decision-making	4.1 Economic analysis	<ul style="list-style-type: none"> • Calculating payback time • Cash flow analysis • Appraisal of the harmony of cluster strategy and cluster goals • Evaluation of the cluster management/ coordinator and partners • Appraisal of the harmony of institutional and organizational forms
	4.2 Possible changes	<ul style="list-style-type: none"> • Finalizing cluster code
	4.3 Finalizing the business plan	<ul style="list-style-type: none"> • Approval
5. Managing the cluster	5.1 Developing a cluster ICT system	<ul style="list-style-type: none"> • Consumer information system • Supply and demand and capacity information • Development and R & D information • Application and support information • Partner and competitor information
	5.2 Developing a cluster communication system	<ul style="list-style-type: none"> • Decision-making forums • Performance management forums • Communication between the cluster management and the partners
6. Progressive development	6.1 Expanding cluster activity	<ul style="list-style-type: none"> • Involvement of new partners • Involvement of new consumer groups • New products / services • Exploring new trans-regional markets
	6.2 Cluster marketing and PR development	<ul style="list-style-type: none"> • Emergence of new markets for the products and services • New sales methods
	6.3 Exploration of innovative opportunities	<ul style="list-style-type: none"> • Offering test products, services or technologies
	6.4 Designing a training system	<ul style="list-style-type: none"> • Training for the managers and the employees

3.1. Assessment of Conditions

Analyzing conditions, SWOT analysis

Cluster establishment starts with the primary assessment of the enterprises and organizations of the region where they can form a cluster. We examine such factors as environmental conditions, technological knowledge, R+D background in the region so that the settlement conditions are given, there is a potential customer group and the macro-environment is also suitable (Figure 3.2.)



The conditions suitable for clustering are the following:

- The number of the companies in the chosen industry in the region is higher than average (concentration criteria);
- Potential supporting industries are given in the region (e.g. suppliers, cooperation partners, R+D organizations and educational institutions, etc.). This means that all the conditions on every level (micro/mezzo/macro) are available for clustering (Table 3.2.)

Table 3.2.

Conditions of clustering		
Micro level	Mezzo level	Macro level
<ul style="list-style-type: none"> • Site conditions • Size • Organizational culture • Resources (financial, technical) 	<ul style="list-style-type: none"> • Market size, solvency • Competitors • Supply and sales networks • Infrastructure • Geographical and cultural conditions 	<ul style="list-style-type: none"> • Legal conditions • Government policy • National and global economic effects

The establishment of clusters depends (besides the environmental conditions) on the willingness of the partners to co-operate.

Comprehensive SWOT analysis

A SWOT analysis (or SWOT matrix) is the method generally used to establish regional development programs. Using a SWOT analysis we are able to summarize and represent systematically the external and internal factors which influence the project. A SWOT analysis evaluates the factors and puts them into one of the four categories of Strengths, Weaknesses, Opportunities and Threats. Strengths and Weaknesses are usually referred to as having an internal origin and being subjective factors while Opportunities and Threats are termed objective factors with external origin (Table 3.3.)

When adapting the SWOT method for cluster establishment, we can consider the production, sales and capacity of the members as internal factors (Strengths and Weaknesses) and the market conditions as external factors (Opportunities and Threats) which refer to the regional, national and international economic conditions.

Table 3.3.

Example for a cluster SWOT matrix

Strengths	Weaknesses
<ul style="list-style-type: none"> • Cluster policies are key elements of the region's development policy • Clusters in automotive, timber and furniture or food industry • Supporting clustering and cluster operations • Bottom-up initiatives from other industries (e.g. building industry or tourism) 	<ul style="list-style-type: none"> • Lack of interest in clusters and cluster oriented development • Stopping government funding • Cluster management faced with daily difficulties • Cluster members are unable to finance the cluster organizations
Opportunities	Threats
<ul style="list-style-type: none"> • Spreading cluster ideas in a wide range • The number of cluster members increases • Providing a wide range of services for the members • New clusters in the region (food, tourism, chemistry) • Cooperation with other national clusters • Cooperation with international clusters 	<ul style="list-style-type: none"> • The government does not recognize the opportunities and there is no government funding for clusters • Clusters fall into the background in terms of funding • Some unsuccessful cluster exerts negative effects on the clustering process • Too many clusters created in the region, the idea of clusters 'degrading'

For a well-founded analysis of the SWOT method, we defined the factors in a general way. Regarding their validity in a specific region, these factors can change and can be omitted from these categories and placed into a different one. Therefore we created a general framework of SWOT which can be adapted to the different regions and industries/sectors. Nevertheless the analysis can give different results for different clusters.

Strengths – Weaknesses

Climate conditions

Due to the different climate conditions, it must be investigated whether the operations of the cluster are limited or distorted in the region or not. It can also happen that the micro-climate of some regions gives extra benefits to the cluster.

Appraisal of natural resources

This phase is about assessing the natural resources which are needed for the cluster's operation in the region. This step also contains an analysis concerning the exploitation of these resources and concerning the financial background. The rarity of resources is also important. It must also be examined whether this rare resource will bring extra consumer interest for the cluster or not.

Infrastructure analysis

Infrastructural conditions influence the entry of the products into the market and also that of the consumers and manufacturers. There are several indices to measure the transportation, telecommunication or commercial infrastructure. These indices represent the regions' attributes and allow us to compare the conditions in several regions. Since there are several indices that measure infrastructural conditions we must restrict the application to those which have a significant impact on the cluster's operation.

Power supply

Connection to the power grid is essential. Furthermore, considering environmental factors as well, alternative and green energy can also influence the security of power supply.

Customer needs

Local consumption is significant when analyzing a region's economic development perspectives. It should be practical to compare the per capita consumption of the region with those of other regions, with the national or international average to specify the development potentials for the cluster's operation. As tourism expands, the consumption of tourists also becomes relevant in addition to local consumption. The cluster can enlarge its market through the tourists and improve its profitability.

Analyzing extra-regional markets

If there is an interest in the cluster's operation in other regions it can cause a market expanding effect similar to that of tourism. We should not overlook the fact that producing for extra-regional markets generates extra costs and it can decrease profitability. In an extra-regional market the cluster becomes defenseless against local competitors.

Producer – distributor capacity

Analyzing enterprise density

The density of the enterprises in a region is highly important because only a certain concentration of the enterprises (in the same industry) and related organizations provides an opportunity to form a cluster.

Enterprise density should be combined with narrow market options. In this case instead of clustering the urge for market displacement will become stronger.

Assessment of workforce skills

The educational level of the workforce is significant for the cluster. The integration of the European labor market can cause a migration of skilled workforce. The change in the demand and supply of the labor markets can be categorized into the "Opportunities – Threats" segments.

Analyzing financial services

Alongside the density of enterprises, the maturity of the financial network is also important. A developed financial network in the region can provide an opportunity for the cluster members to draw on the long product-line of financial institutions. The deposits of the region's financial institutions can also become a source of credit for the cluster if needed. In addition, a specialized financial network is needed to handle the tasks of the local and national subsidies.

Assessment of the consulting network

The existence of a financial and professional consulting network in the region can ensure the independent and profit-oriented entrepreneurial background which is needed for the cluster's institutions to operate. Consulting companies working independently from the cluster's operations can be coordinators in the cluster.

Surveying the interests of business federations and trade unions

Business federations and trade associations can be also coordinators in the cluster and can represent the cluster's interest on a national or international level.

Their task can be to coordinate entry into the international market, to bring the possibilities of the cluster to the foreign investors' notice. These associations are non-profit organizations so they can have a great role in the start-up phase of a cluster.

After the accomplishment of clustering, coordinating tasks should be delegated to profit-oriented enterprises. Non-profit interests can reduce the efficiency of the cluster in this phase.

Examining public administration

The role of the local government can also be important because an efficient administration can save costs (e.g. authorization for the cluster's operations). The local government is concerned in the profitability of regional economy and the improvement of employment since its sources are based on the income, corporate and other proportional taxes. These taxes can be generated by a successful cluster.

Civil organizations

The effect of civil organizations is indirect, though some of the organizations can also support a cluster's operations directly. A mature civil society can enhance the cooperation between the members of the economy. These skills are absolutely necessary for establishing civil forms of cooperation in an economy.

Analyzing the economic-cultural heritage

At the beginning of clustering the capability of the members to reform traditional forms of cooperation can be really important. The cooperation can flourish if the members have been active for a long time in the same region since joining each other's activity partners do not want to displace the others in the market and they are willing to unite their resources in order to enhance activities or improve profitability. In countries lacking such market traditions these revelations come harder and forming cooperation is more complicated.

Opportunities – Threats

Analyzing demographics

Demographics influence the labor market and the consumer market in the region of the cluster. In aging societies the activity rate drops and narrows the supply of workforce and generally the consumer market as well. At the same time the modification of the population's age structure can generate additional consumer needs. A series of certain age-groups can cause an expansion of the market. An example for aging societies is the growing need for medical and nursing services.

Analyzing migration effects

Besides the natural increase, the assessment of the threats and opportunities of the effects of migration is also relevant. Regarding the fact that the active population migrates primarily, the future migration tendencies have a significant influence on the distribution of labor supply. In the process of European integration the liberation of the rules of settlement allows the migration of not only the workers but of their families as well. Therefore the migration of the dependent persons can increase, which can cause a growing need for social, educational and medical services.

Analyzing the region's economic-social situation

The most important index of a region's development is per capita GDP. This index represents a region's general socio-economic development. The situation of the examined region compared to other regions can give an orientation about the possibilities of the extension of the cluster's activity.

In underdeveloped regions there is solvent demand only for basic products and services. In regions with above average per capita GDP there is an opportunity to establish clusters for non-basic products and services as well. There can be an additional market opportunity if the index shows further progress or if the cluster's activity is not confined to the regional demand.

Analyzing customer income status

The income status of the customers depends on the overall socio-economic situation of the region. In addition, the size of households and the number of dependants also influence the demand for the cluster's products and services. The demand for public-utility services and the activities of related enterprises can be

heavily influenced if the funding for these activities is included in the local or national budget.

Analyzing investment conditions

When analyzing investment attraction, intra- and extra-regional investment needs are both relevant. The population's propensity to save and the favorable situation of the local enterprises can be the basis for the cluster's financial needs. In this case an efficient bank system can provide loans or other forms of funding. With the mediation of the bank system, the investment need can be supported by share subscription. If the region's stock of funds is insufficient, in most of the cases an investigation of international investment intentions is required.

In the current situation of the global economy the investment intention is given; the only question is how a region's attractiveness changes.

Investment intentions cannot be separated from the general assessment of a country but regional aspects can be also important.

Regions must advertize themselves with additional allowances and discounts. These can be local tax reliefs, preferential establishment, return above average or other business opportunities. Foreign investors are highly sensitive to the availability of the customary infrastructural background of developed countries and to an acceptable level of transportation and telecommunication infrastructure.

Industrial regional cyclic analysis

Besides the general socio-economic development of a region, the tendencies of the industries of the cluster in question in the region are also important. This particular situation can differ from the national economic situation and it can be reasonable to count with other threats and opportunities. At the same time the fluctuation of business activities cannot be eliminated. Therefore the economic cycle can be only important for the start-up of activities since the profitability of an average cyclic situation can be the basis for long-term operations.

Examining economic policy priorities

Local and government funds must be assigned to the key task in economic policy. The possibility of the continuation of the cluster's successful activity is highly influenced by the opportunities provided by the subsidy programs which the cluster can join.

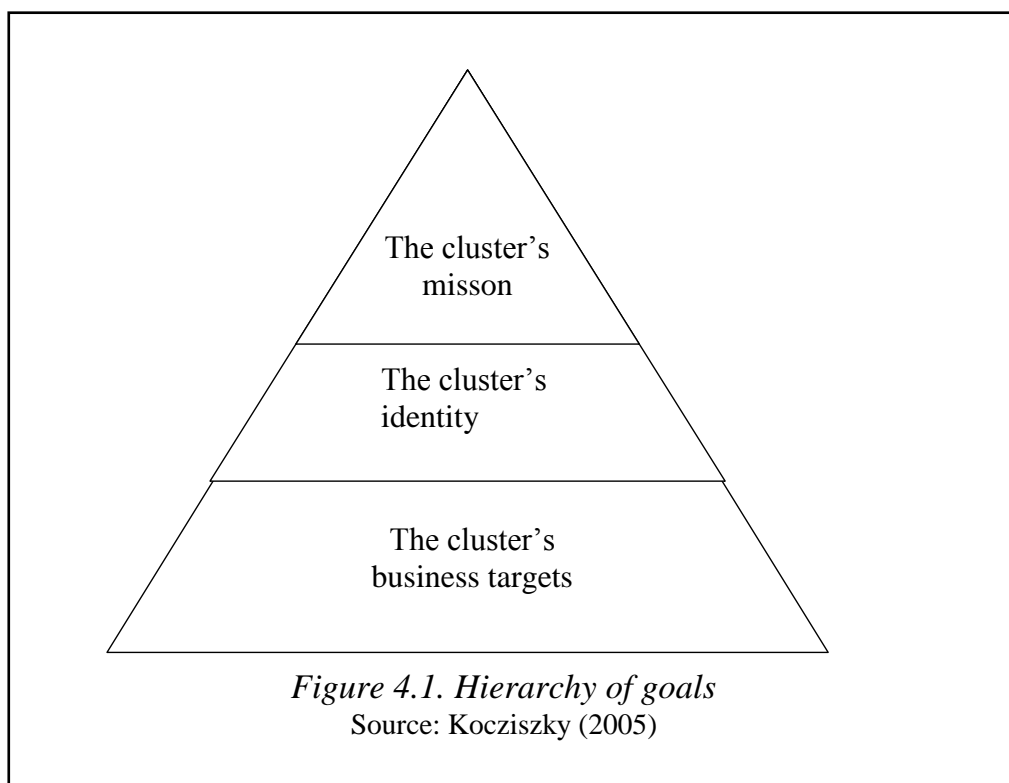
Besides the national management of the economy, the local governance can start similar initiatives and in the future the regional sources can also increase. The priorities in the economy can change in the intermediate run, so decision-makers should be aware of changes in the competitive factors. In the early 1990s the support for activities based on the low rate of wages seemed to be an effective tool, but as the relative competitive advantages decrease the activities (and the companies) based on only this factor migrate to other regions.

3.2. Defining Goals

Goals, hierarchy

Regional clusters are part of the collective actions in a national economy. During the phase of establishment and support, clusters rely on the local and regional informal powers of the society, on their values, traditions and networks of individuals and institutions, basically on benevolent provincialism. The stronger a regional or local identity is, the greater resources a cluster can mobilize by means of the approach mentioned.

The hierarchy of goals for a cluster consists of complex market, efficiency, image, prestige, financial and social goals (Figure 4.1.)



The goals can be systemized in a hierarchy (Figure 4.2. and Table 4.1.)

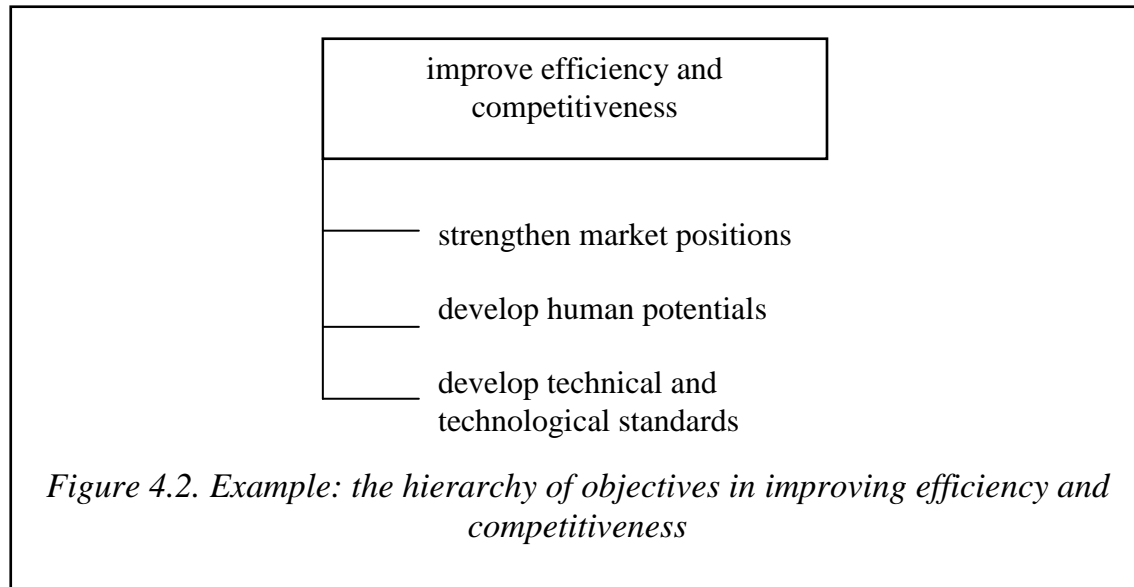


Table 4.1.

Typical cluster activities

Goal	Activity
Strengthen market positions, market expansion	<ul style="list-style-type: none"> joint PR and marketing activities coordination and development of acquisition / sale
Develop human potentials	<ul style="list-style-type: none"> joint training and education transfer of technological knowledge within the cluster
Develop technical and technological standards	<ul style="list-style-type: none"> joint procurement and fund-raising coordination of capacity utilization rationalization of processes coordination of quality assurance

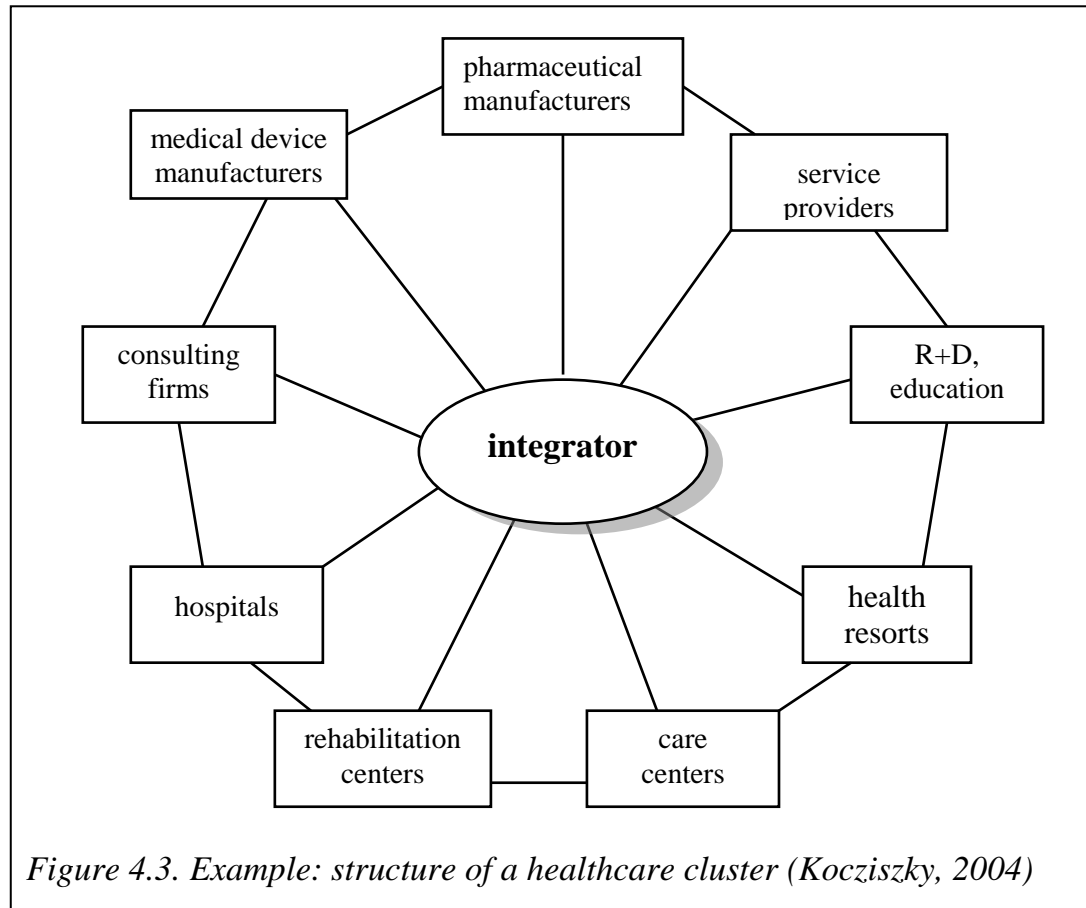
The traditional cluster functions (Table 4.2.) are collecting and providing information, marketing functions, training, knowledge management, technology transfer, business incubation, sales and project management tasks.

Table 4.2.

List of cluster functions (Kocziszky, 2004)

Function	Tasks
<i>Information provision</i>	<p><i>It provides information for the members of the cluster about the ...:</i></p> <ul style="list-style-type: none"> • competitors, • market (domestic, international), • fund-raising potentials, • products, services, • customers, suppliers, • active projects. <p><i>It provides information for others about the...:</i></p> <ul style="list-style-type: none"> • clusters' activities and business results.
<i>Non profit / business services marketing</i>	<ul style="list-style-type: none"> • cluster/ cluster's services • improving the reputation • market research • workshops • press review • lobbying • strengthening cluster awareness • analyzing the development of the cluster
<i>Education / training</i>	<ul style="list-style-type: none"> • advanced technological trainings • management knowledge • project management knowledge
<i>Knowledge / technology transfer</i>	<ul style="list-style-type: none"> • contributing to the propagation of new technologies and knowledge
<i>Providing incubator services</i>	<ul style="list-style-type: none"> • help in fund-raising • administrative assistance • providing production site and infrastructure
<i>Organization of meetings</i>	<ul style="list-style-type: none"> • organizing events • organizing study trips • introduction of cluster members • organizing workshops
<i>Project management</i>	<ul style="list-style-type: none"> • writing tenders/applications/proposals • generating projects • coordination of projects • co-operation in projects

Most of the clusters operate as separate legal entities and the members can join the cluster also as separate firms. A member connecting to the integrator can also link new members to the cluster.



In the last few years clusters have been established not only in traditional industries but there has also emerged an innovation and R+D orientation as well as an increase in added value and export capabilities. According to the OECD, the most often supported clusters around the world are active in the sectors of business services, electronics, informatics, telecommunication, surgical instruments, pharmaceuticals and the environmental industry. Naturally, the clustering of enterprises can be only supported in regions where there is a certain concentration of companies in the industry in question.

Typical clusters categorized by the member companies and their relations can be described in the following terms:

- a great number of small enterprises with the same product,
- same product, a great number of small enterprises, some medium-sized enterprises some of which emerge as leading companies,
- a tight network of subcontractors of local firms,
- a network of suppliers around one or more integrator company,
- specialized medium-sized enterprises in a special market niche.

Review questions

1. Which tasks of cluster establishment can be performed step-by-step and which can be done in parallel?
2. What is the reason for assessing the economic conditions for cluster establishment?
3. What kind of goals can a cluster have?
4. How can the harmony between the different goals of a cluster be ensured?

4. Establishing Regional Clusters II

4.1. Maintaining Organizational and Operational Conditions

Coordination of vertical and horizontal clusters

Clusters and the way of their establishment can be horizontal or vertical. In a vertical cluster a significant company manages its network of suppliers. In this case, besides the suppliers, there is no need for business federations or governmental institutions to join the cluster. Moreover, horizontal cooperation is not desirable in order to maintain the position of the dominant corporation in the market.

In the case of a horizontal cluster the member enterprises are willing to enjoy the competitive benefits ensured by the joint market presence of a cluster. For vertical clusters, the involvement of business federations and regional authorities alongside the profit-oriented enterprises is essential. At the same time the value-adding activities and profit orientation can also be defined. In this case the dominant position of the entrepreneurial partners must be ensured.

Coordination of cluster activities

Organizations working together in a cluster are independent legal entities which coordinate the different activities of the cluster on different levels of institutionalism. In vertical clusters coordination is provided by the large corporation which manages the cooperation. It ensures the framework for a long-term cooperation with the continuous competition of the suppliers and with contractual terms.

In horizontal clusters the interests of the members should be maintained and this must be ensured in a changing market environment where regulations and professional interests can change. Considering a horizontal cluster, it is not based on one dominant company but is a network of enterprises with similar sizes, where cluster coordination must be delegated to a third party organization, to an independent consulting group or business federation. A separate cluster management organization can be also created.

The cluster management organization can operate at the cost of the members or from the services it provides to the member companies, at the cost of a local, national or project budget. In most of the cases public funding by local or national government cannot be avoided but later on a cluster must operate only under competitive market conditions. The operation of a cluster must be based on value-adding processes which provide the security for self-support.

Exchange of information

Information exchange by vertical clusters is managed by the dominant integrator company. The volume, quality, price and the scheduling of supply are developed by open bidding.

In a horizontal cluster shared information covers the market or the activities of the different members. Market information is gathered by the cluster management. It performs the analysis and forwards it to the members. Information arising at the members is forwarded to the management organization and the redistribution is managed by the management organization.

Conciliation, conflict management

The role of the cluster management organization is to mediate between the members and manage their conflicts. In this process conflicts of interests of the actors in the same market can be resolved. Conciliation and conflict management can be performed according to the authority of the organization.

Joint appearance

The cluster management organization can appear on behalf of the cluster at national and international forums in accordance with the rights conferred by the members.

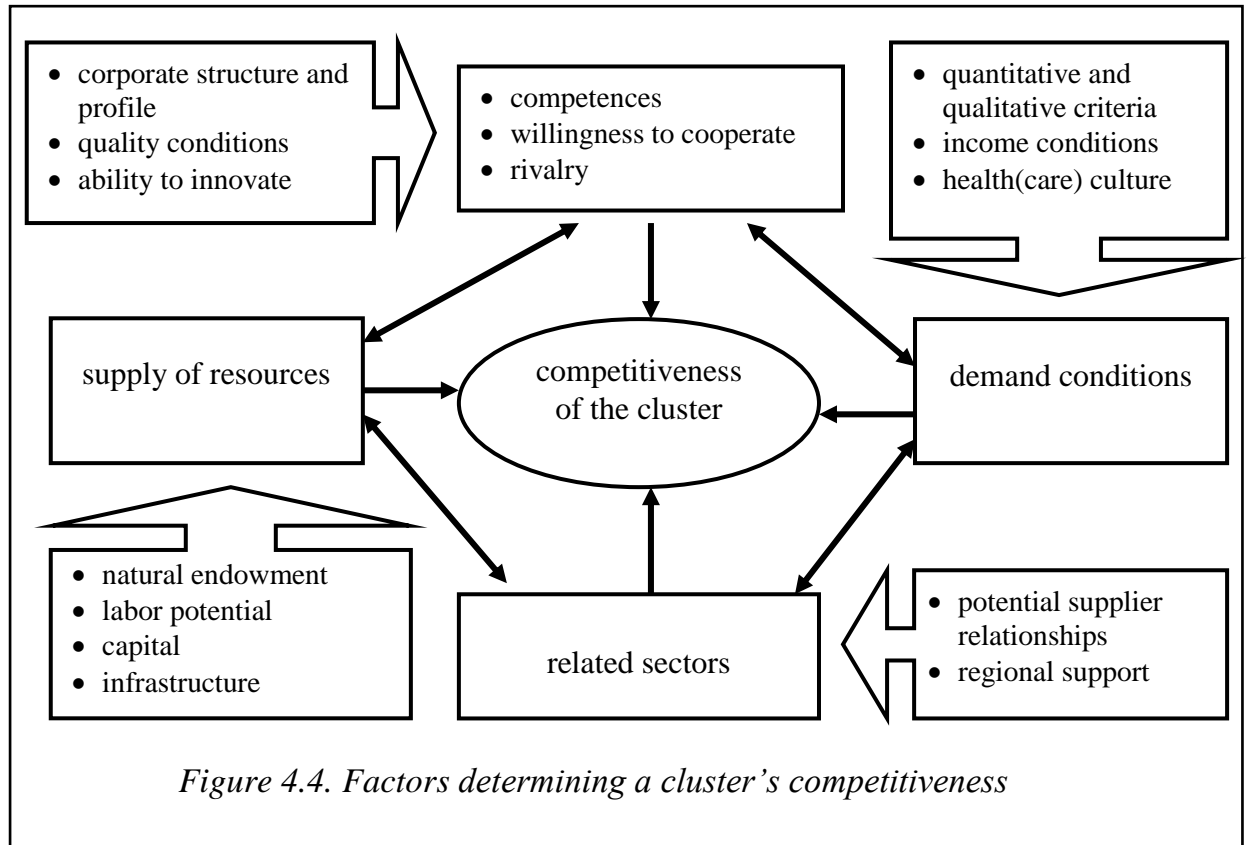
Decision making

The cluster management organization prepares the decision making process. It can collect data, analyze and assess them and provide alternative decisions. It can also define the different consequences, resource requirements and funding suggestions.

Shaping common interests

The cluster's long-term goal is to create a common interest between the member enterprises and the institutions. This interest is not only profit redistribution between the members but also the establishment of a lasting market presence.

The cooperation of the members ensures long-term profitability and a strategic alliance between them independently from the market situation.



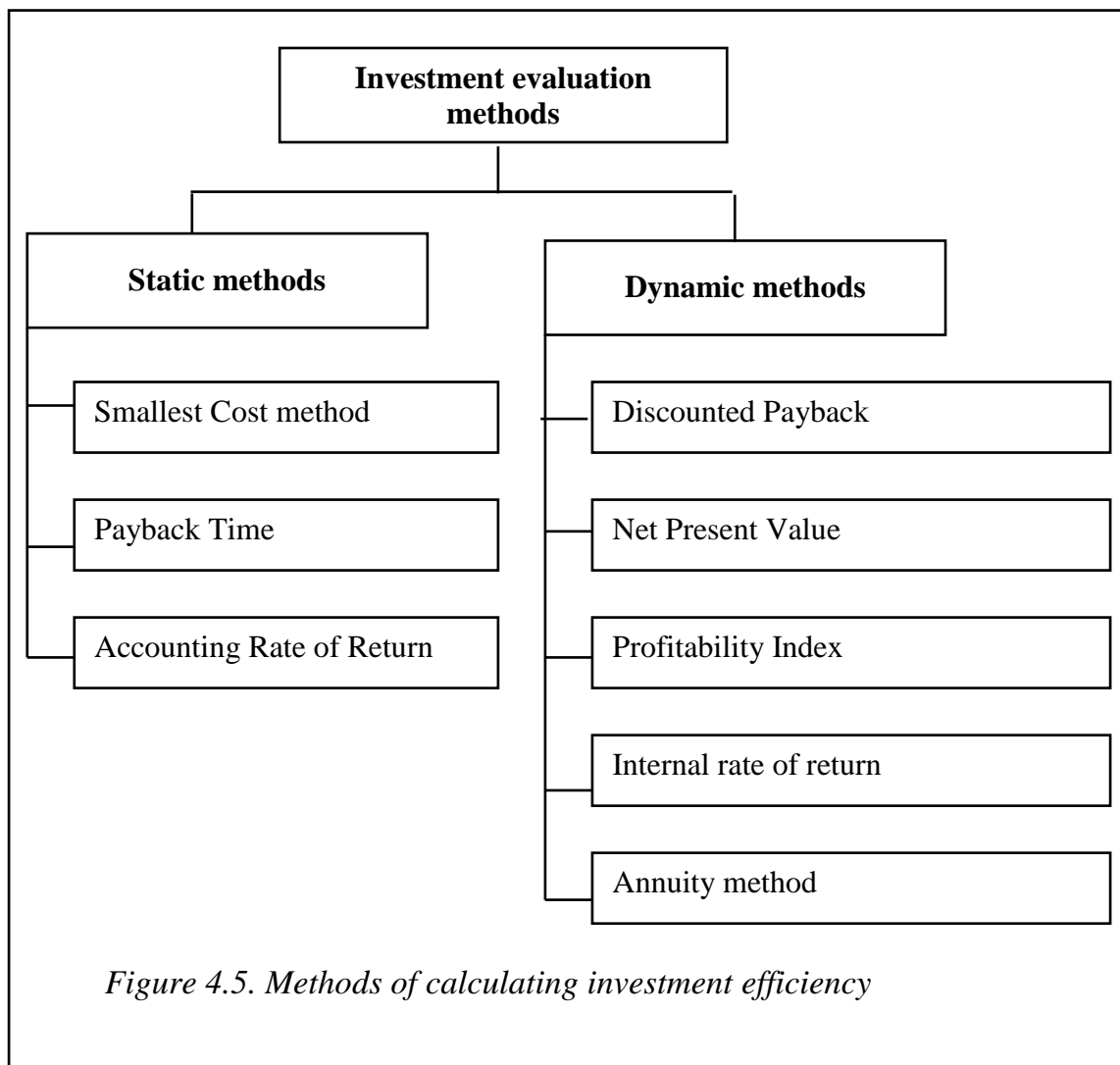
4.2. Impact Analysis, Decision-Making

Purpose of impact analysis, methods and decisions criteria

The impact analysis regarding clustering has two different perspectives. On the one hand, it consists of investment evaluation methods and, on the other, these investigations are performed to create an analysis about future market influences.

Investment evaluation methods

Investment evaluation methods can be categorized according to the way they involve the principle of the time value of money (Figure 4.5.)



Static methods of investment evaluation are the methods which do not consider the time value of money so they compare the values regardless of the moment of time. Methods considering the time value of money are called the dynamic methods of investment evaluation.

Smallest Cost method – SC

The smallest cost method chooses the investment which has the lowest investment cost. This method does not consider the earnings of the investment (Table 4.3.)

Table 4.3.

Features of the Smallest Cost (SC) method

Calculation	Comparison of investment costs
Goal	Minimizing investment costs
Term of acceptance	Actual cost < Defined cost
Ranking	Ascending order by costs

Payback Time – PB

The Payback Time method compares the durations of the payback of the investments, i.e. when the sum of the total cash flow of the investment equals the investment costs (Table 4.4.)

Table 4.4.

Features of Payback Time (PB) method

Calculation	$P_0 = \sum_{i=1}^n CF_i$ <div style="display: flex; justify-content: space-between; font-size: small;"> <div>where: P_0 – initial investment</div> <div>CF_i – the investment's cash flow in the i^{th} moment</div> <div>n – payback time of investment</div> </div>
Goal	Maintain liquidity, increase profitability
Term of acceptance	Actual PB < Defined PB
Ranking	Ascending order by payback time

Accounting Rate of Return-ARR

Accounting Rate of Return (or Average Rate of Return) compares the investment cost with the return generated from the net income of the capital investment. It calculates the average profitability of the investment when dividing the average expected profit by the investment cost or by the average book value of the investment (Table 4.5.)

Table 4.5.

Features of the Accounting Rate of Return (ARR) method

Calculation	$ARR = \frac{\frac{1}{n} \times \sum_{i=1}^n E_i}{P_0},$ <p>where: P_0 – cost of investment, or average book value E_i – result of the investment in the i^{th} moment n – lifetime of the investment ARR – Accounting Rate of Return of the investment</p>
Goal	Maximize ROA index
Term of acceptance	Expected ARR < Actual ARR
Ranking	Descending order by the accounting rate

There is no agreement on the calculation of ARR, but usually the net income or net profit is used in this method. The denominator is usually the investment cost or the average book value of the investment (Table 4.6)

Table 4.6.

Example: determination of the Accounting Rate of Return

Investment data	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cost of investment	900000	0	0	0	0	0	0	0	0	0	0	0
Operation expenses	0	165000	177000	190000	195500	206300	214700	223500	231600	239800	247300	255200
Revenues	0	280000	372000	465000	480000	495000	511000	523000	535000	549000	563000	581000
Cash flows	-900000	115000	195000	275000	284500	288700	296300	299500	303400	309200	315700	325800
Amortization	0	130000	130000	130000	130000	130000	130000	130000	50000	50000	50000	50000
Result	-900000	-15000	65000	145000	154500	158700	166300	169500	253400	259200	265700	275800
Average profit	172555											
ARR	0.19											
Expected ARR	0.10											

Dynamic methods of investment evaluation

Dynamic investment evaluation methods consider the time value of money. The methods have the following in common. They calculate the present value of a time series of cash flows with a discount rate. Dynamic methods are usually called discount methods.

Discounted Payback – DPB

This method is similar to the payback method but it is applied to the discounted cash flows. A discounted payback period gives the number of years it takes to break even after undertaking the initial expenditure (Table 4.7.)

Table 4.7.

Features of the Discounted Payback (DPB) method

Calculation	$n \Rightarrow P_0 = \sum_{i=1}^n \frac{CF_i}{(1+r)^i},$ <div style="display: flex; justify-content: space-between;"> <div> P_0 – cost of the investment, or the average book value CF_i – cash flow of the investment in the i^{th} moment n – payback time of the investment (year) r – discount rate </div> </div>
Goal	Maintain liquidity, increase profitability
Term of acceptance	Expected DPB > Actual DPB
Ranking	Ascending order by payback time

Table 4.8.

Example: determination of the Discounted Payback

Investment data	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cost of investment	2150000	0	0	0	0	0	0	0	0	0	0	0
Operating expenses	0	88000	95400	104000	112500	124600	133100	142000	151500	159600	166400	17300
Revenues	0	280000	372000	465000	480000	495000	511000	523000	535000	549000	563000	581000
Cash flows	-2150000	192000	276600	361000	367500	370400	377900	381000	383500	389400	396600	408000
Present value of cashflows	-2150000	174545	228595	271225	251007	229989	213315	195513	178906	165144	152906	143002
Cumulative cash flows	-2150000	-1975455	-1746860	-1475635	-1224627	-994638	-781323	-585810	-406905	-241761	-88855	54147

Net Present Value – NPV

If the goal of the company shareholders is to maximize their assets, the NPV shows the investment's contribution to this goal. Relevant information for the NPV calculation can be added.

NPV is additive so if 'A' and 'B' are two investments, the following equation is true:

$$NPV_A + NPV_B = NPV_{A+B}$$

NPV is an indicator of how much value an investment or project adds to the firm (Table 4.9.)

Table 4.9.

Features of the Net Present Value (NPV) method

Calculation	$NPV = -P_0 + \sum_{i=1}^n \frac{CF_i}{(1+r)^i}$ <p> P_0 – cost of investment, or average book value CF_i – cash flow of the investment in the i^{th} moment n – time r – discount rate NPV – Net Present Value of the investment </p>
Goal	Wealth maximization of the shareholders
Term of acceptance	$NPV > 0$
Ranking	Descending order by NPV

Gross present value (GPV) is the total present value of all the cash flows and it is compared with the market price of the investment. Gross present value represents the maximum price that an investor is willing to pay for the investment. If the book value of the investment is deducted from the GPV, we get the sum of how much value an investment adds to the firm. If NPV is positive, the value grows, if it is negative, the value drops, and when it is zero, there is no change due to the investment in the value of the firm (Table 4.10)

Profitability Index – PI

NPV shows the change in the value of a firm. However, it does matter how large an investment is needed for the project in hand.

Table 4.10.

Example: determination of Net Present Value

Investment data	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cost of investment	2150000	0	0	0	0	0	0	0	0	0	0	0
Operating expenses	0	88000	95400	104000	112500	124600	133100	142000	151500	159600	166400	173000
Revenues	0	280000	372000	465000	480000	495000	511000	523000	535000	549000	563000	581000
Cash flows	-2150000	192000	276600	361000	367500	370400	377900	381000	383500	389400	396600	408000
Present value of cash flows	-2150000	174545	228595	271225	251007	229989	213315	195513	178906	165144	152906	143002
Cumulative cash flows	-2150000	-1975455	-1746860	-1475635	-1224627	-994638	-781323	-585810	-406905	-241761	-88855	54147
Net Present Value	54147											

It is highly important if the company does not realize all the investments with positive NPV because of its insufficient funds. In this case we talk about a capital constraint when not all the investments with a positive NPV can be realized because of the financial situation of the firm. If the firm cannot obtain funds from the market, we talk about external capital constraints. If the enterprise is able to raise funds from the market but the management limits borrowing, we have an internal capital constraint. If the capital is constrained for one year, it is a single-period constraint; when it lasts for several years, we have a multi-period capital constraint. In the case of capital constraint, NPV per investment must be calculated. This represents the amount of value created per unit of investment. This ratio is called the Profitability Index (PI). In other words, PI shows the multiplication of the money invested. PI can be applied for only a single-period of capital constraint.

Table 4.11.

Features of the Profitability Index method

Calculation	$PI = \frac{GPV}{P_0}$ <p>GPV – present value of future cash flows, gross present value P_0 – amount of capital invested PI – Profitability index</p>
Goal	Specific wealth growth maximization
Term of acceptance:	$PI > 1$
Ranking:	Descending order by Profitability Index

The acceptance or refusal criteria of NPV and PI are consistent. The extra information provided by PI can be used by ranking the investments when not every investment with a positive NPV can be realized (Table 4.12.)

Table 4.12.

Example: determination of the Profitability Index

Investment data	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cost of investment	2150000	0	0	0	0	0	0	0	0	0	0	0
Operating costs	0	88000	95400	104000	112500	124600	133100	142000	151500	159600	166400	173000
Revenues	0	280000	372000	465000	480000	495000	511000	523000	535000	549000	563000	581000
Cash flows	-2150000	192000	276600	361000	367500	370400	377900	381000	383500	389400	396600	408000
Present value of cash flows	-2150000	174545	228595	271225	251007	229989	213315	195513	178906	165144	152906	143002
Cumulated cash flows	-2150000	-1975455	-1746860	-1475635	-1224627	-994638	-781323	-585810	-406905	-241761	-88855	54147
NPV	54147											
GPV	2204147											
PI	1.03											

Internal Rate of Return - IRR

The Internal Rate of Return is the discount rate at which the present value of all future cash flows is equal to the initial investment or, in other words, the rate at which an investment breaks even. The IRR shows the rate of interest generated by the investment if we assume that the cash flows can be invested with the calculated interest rate (Table 4.13.)

Table 4.13.

Features of Internal Rate of Return (IRR) method

Calculation	$NPV = 0 = -P_0 + \sum_{i=1}^n \frac{CF_i}{(1 + IRR)^i}$
Goal	Maximization of the rate of return
Term of acceptance	Expected IRR < Actual IRR
Ranking	Descending order by Internal Rate of Return

In more specific terms, the IRR of an investment is the discount rate at which the net present value of the costs of the investment equals the net present value of the benefits of the investment.

Equivalent Annual Cost Method –EAC

The EAC method can be considered to be an indirect NPV. The Equivalent Annual Cost is the cost per year of owning and operating an asset over its entire lifespan. NPV is calculated for the present moment while EAC transforms the investment costs and compares them with the actual cash flows. It shows the minimum returns which an investment should provide to increase assets along its entire lifetime (Table 4.14.)

Table 4.14.

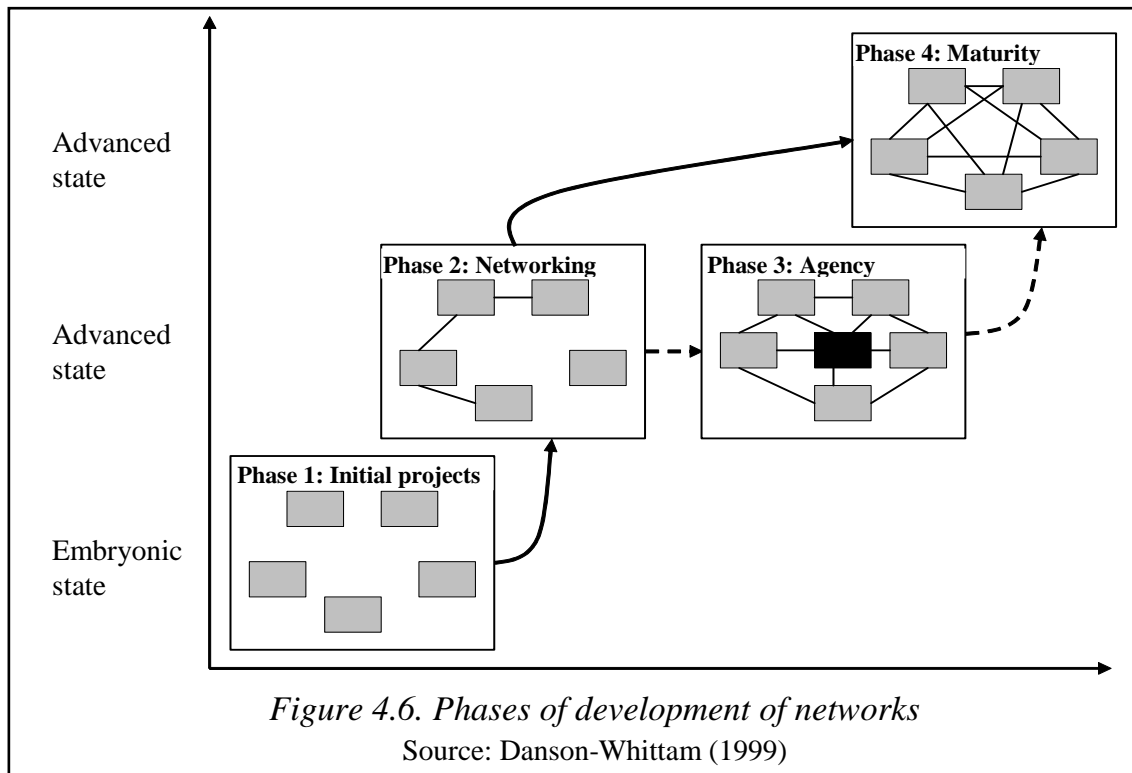
Features of the Equivalent Annual Cost (EAC) method

Calculation	$KE = \frac{P_0}{AF_{r,n}}$ <p> P_0 – cost of the investment $AF_{r,n}$ – annuity factor in case of r rate of return and n period KE – Equivalent Annual Cost </p>
Goal	Wealth growth of the shareholders
Term of acceptance	All actual return > EAC
Ranking	Descending order by NPV

EAC transforms the costs into future expenditures at a certain expected rate and period of investment. Therefore investments with different lifetimes can be compared.

Analyzing future effects

The analysis of future trends refers to the prospects of the industry of the cluster and also to the planned expansion and strengthening of the cluster itself. Figure 4.6. shows the phases of development.



It must be examined when the cluster (and the enterprises as well) will evolve from the embryonic phase into maturity.

4.3. Controlling Operation

<i>Cluster founding document, bylaws</i>
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After the decision on clustering and after getting acquainted with business plans and feasibility studies the agreement of cooperation (cluster code) must be concluded by the members. This document must include:

- the foundation (time and place) and the planned operation period of the cluster (definite, indefinite);
- the goal of the cluster (e.g. production, services, R & D & I, PR, marketing, collaboration with other clusters, etc.);
- plan of work (e.g. frequency of holding a General Meeting, the way of convening it, appointment of the operative management board, members of the board, voting rates, etc.);
- ethical principles of operation;
- procedures of admission and exclusion;
- services and obligations of the members;
- organizational structure, name of CEO, decision-making mechanism;
- property ratios of joint projects and rules of project procurement;
- management of intellectual property rights (Intellectual property may include all the outcome of the R+D activities: patents, invention, know-how, industrial design, new products with added value of innovation that are marketable, useful and can have trademark protection.);
- financial conditions of operation (e.g. calculation of membership fees, their amounts and payment methods, etc.);
- confidentiality agreements;
- rules of publishing.

The General Assembly (GA) is the main decision-making instrument of the cluster. The members of the cluster govern the organization and make decisions about the most important questions at the General Assembly. The members of the GA are delegated by the cluster member organizations. Its tasks and sphere of authority cover the following: accepting and modifying the working order, defining the membership fees, accepting the budget, supervising cluster management, admission of new members, and supervising assets above a certain limit of value. The GA meets 2-3 times a year but it can be convened whenever the members initiate it.

The executive board of the cluster is the Cluster Management Organization (CMO), which consists of the cluster managers and the supporting administrative staff. The task of the CMO is to manage the daily operation of the cluster, to oversee the administrative and organizational work, and to prepare and submit strategic plans (budget, marketing, etc.) for the GA. The cluster can decide what kind of other supporting organizations they want to establish. Professional boards can be established to define the trends in the industry and to define the progressive steps and actions of the cluster. These professional boards can trace the possible projects of the cluster and after realization they can qualify the partial and total results.

4.4. Starting-up and Maintaining Operation

<i>Functions of cluster business plans, feasibility of clusters</i>

In this step the info-communication links between the stakeholders should be protected in order to realize the projects launched. This includes the communication between the market and the cluster members and the continuous communication between cluster management and the members. These ways of communication should be designed in order to satisfy the members' needs. These processes should be managed in a value-adding and profit-oriented way so as the quantity, quality and delivery of the information should provide extra knowledge to the cluster members. This form of exchange of information in the cluster should be easier and cheaper than if the members did it for themselves.

Without attempting to be comprehensive, the following needs to be considered regarding the content of the information:

- Development trends. Changes in the market positions of the various products and services, composition of demand and supply trends.
- Technology development trends. New technologies in manufacturing, use or distribution. Information about the availability and penetration of new technologies related to the cluster's products.
- Market information. Changes in market share and profitability of the competitors. Strengths and weaknesses of the competitors and changes in market opportunities.
- Subventions, subsidies. fund-raising opportunities, tenders, cooperation opportunities and information about possible partners.

Continuous development of the cluster's operation

The operation of the cluster should not be limited to maintaining a status quo in a changing market environment but it must use all the opportunities to enlarge the activities. The cluster must be prepared for the future needs of expansion.

- Training. The continuous development of the managerial and work capacity of the members must be set as a target. This process consists of getting acquainted with new technologies in the fields of manufacturing, sales, quality assurance, environmental techniques, and consumer protection.
- Realizing innovative projects. When participating in novel projects, cluster members can cooperate with research centers, higher education institutions, and consulting organizations in order to apply new technologies and produce leading products.
- Expanding the cluster's field of operation can also mean an international expansion which leads to a more extensive market presence.
- Marketing and PR activity of the cluster. To intensify the cooperation of the cluster the activities should be introduced to new potential partners who can be involved in the operation of the cluster.

Evaluating the cluster's cooperation

When developing the clusters' operations, regular evaluation, reporting activity and continuous feedback are needed to inform the members. The frequency of reporting should be adjusted to the milestones and the budgets of the projects. At the same time, the realization of strategic goals should be examined regularly. After establishing the cluster, an evaluation of cooperation between the members and the cluster management should be performed. The result of the evaluation can help the cluster to revise and transform the different forms of cluster organizations.

Table 4.15.

Schedule of the establishment and operation of a cluster without separate legal entity

No.		Year 1	Year 2	Year 3
1.	Idea of establishing the cluster	X		
2.	Determination of the cluster's mission and objectives	X		
3.	Drawing up the cluster's founding document	X		
4.	Determination of the circle of founders	X		
5.	Organizing the network of contacts and the flow of information (creating a Web site)	X		
6.	Compilation of the business plan	X	X	X
7.	Decisive steps towards achieving the goals <ul style="list-style-type: none"> • Information services • Training • Professional meetings 	X	X	X
8.	Publishing and updating the emerging relevant information	X	X	X
9.	Monitoring the achievement of goals	X	X	X
10.	Holding regular members' meetings	X	X	X
11.	Regular revision of objectives and functions		X	X
12.	Revision of the supporting individuals and organizations		X	X
13.	Integrating new members into the collaboration		X	X

Table 4.16.

Continuously expanding cluster with formal employees and organization established during operation

No.		Year 1	Year 2	Year 3
1.	Idea of establishing the cluster	X		
2.	Emergence of the founder's will of clustering	X		
3.	Determination of the circle of founders	X		
4.	Determination of organizational form and structure	X		
5.	Selection and confirmation of office-holders	X	X	X
6.	Determination of supporting individuals and organizations	X		
7.	Determination of the cluster's mission and objectives	X		
8.	Organizing the network of contacts and the flow of information (creating a Web site)	X		
9.	Determination and allocation of the resources of operation	X	X	X
10.	Steps towards achieving the goals: <ul style="list-style-type: none"> • Information services • Professional meetings 	X	X	X
11.	Publishing and updating the emerging relevant information	X	X	X
12.	Monitoring the achievement of goals	X	X	X
13.	Holding regular members' and executive meetings	X	X	X
14.	Regular revision of objectives and functions	X	X	X
15.	Revision of the supporting individuals and organizations		X	X
16.	Integrating new members into the collaboration		X	X
17.	The founders set up an office due to the increased variety of tasks			X
18.	Decisive steps towards achieving increased goals: <ul style="list-style-type: none"> • Education/Training • Project management • Incubator functions • Providing non profit / business services 	X	X	X
19.	The revision of the cluster's mission and goals becomes necessary due to the opportunities provided by the formal organization			X
20.	The organization coordinates projects or takes part in them			X
21.	Monitoring the achievement of goals			X

Table 4.17.

Cluster performing complex objectives with formal organization and employees

No.		Year 1	Year 2	Year 3
1.	Idea of establishing the cluster	X		
2.	Emergence of the founder's will of clustering	X		
3.	Determination of the circle of founders	X		
4.	Determination of organizational form and structure	X		
5.	Selection and confirmation of office-holders	X		
6.	Determination of the supporting individuals and organizations	X		
7.	Determination of the cluster's mission and objectives	X		
8.	Organizing the network of contacts and the flow of information (creating a Web site)	X		
9.	Determination and allocation of the resources of operation	X	X	X
10.	Decisive steps towards the completion of complex tasks: <ul style="list-style-type: none"> • Information services • Organizing professional meetings • Education/Training • Project management • Incubator functions • Providing non profit / business services 	X	X	X
11.	Publishing and updating the emerging relevant information	X	X	X
12.	Monitoring the achievement of complex goals	X	X	X
13.	Holding regular members' and executive meetings	X	X	X
14.	Regular revision of objectives and functions	X	X	X
15.	Revision of the supporting individuals and organizations	X	X	X
16.	Integrating new members into the collaboration		X	X

Review questions

1. What is a vertical cluster?

2. What is a horizontal cluster?
3. What is the goal of investment evaluation methods?
4. How can we compare the methods of investment evaluation?
5. What is an investment impact analysis?
6. What kinds of investment impact analysis do you know?
7. Why are cluster founding documents needed?
8. What should be regulated to ensure the successful and lawful operation of a cluster?
9. What is the goal of the business plan?
10. What kind of factors can threaten the sustainable operation of the cluster?

5. Experience in European Clustering

Italian, Danish and Swedish models

Clusters are indeed diverse by size. Their size depends on their age, the market size and the character of their operations. Therefore Italian clusters (which have existed for a long time) have more members. They are organized on sub-regional level and the members are mainly micro and small enterprises. The Prato industrial area has 8,000 enterprises employing close to 45,000 people in the textile industry. Younger clusters are usually smaller. In Denmark more than 1,000 networks with 5,000 enterprises were established in five years. The number of members is still rising. In Norway (just as in Denmark), where clusters were established by mediators, 700 networks were established uniting 2,700 enterprises. In developing countries clusters fostered by UNIDO start with an average of 10 members.

The Italian model

Several forms of clusters have emerged or have been established by governmental policies all over the world. The Italian economy represented the first examples of clustering in the world so here a detailed description is given of this model^{19/}.

In the 1970s thanks to the benevolent socio-economic conditions, cooperating networks of Italian SMEs became the driving force of North, East and Central Italy^{20/}. The establishment of Italian clusters coincided with the economic opening of the country. In this period Italy signed international trade agreements, developed demand stimulating fiscal and tax policies and an export supporting exchange rate policy.

Positive market expectations, high demands and low market entry barriers stimulated business start-ups but the relatively underdeveloped financial infrastructure and the capital constraints presented favorable conditions for self-financing small enterprises based on the local markets. That was how clusters of the

^{19/} [http://www.nomisma.it/new_eng/documenti_Industry and Business](http://www.nomisma.it/new_eng/documenti_Industry%20and%20Business))

^{20/} <http://www.unido.org/doc/4310>: The Unido cluster/Network development programme: Italian experience of Industrial Districts.

members of specialized, horizontally diversified end-producers created what is called the 'Distretto industrial'.

In response to the changes in international and Italian economy, the Italian clusters have changed. The natural selection of enterprises was caused partially by the national economic difficulties and partly because of the emergence of new markets. There is a significant hierarchy in the clusters. The roles of medium-sized enterprises and intertwined cooperating groups have been increased. Local suppliers join this level of the cluster. This is especially true for machine industry clusters. With the change of the production structure, the system of collaboration between the firms has changed as well. Export has become the core factor of growth and small enterprises could hardly join this new network. At this point support was needed for the clusters (which evolved spontaneously till then). In the early 1990s new laws of SMEs were passed which defined the framework of subventions of credit guarantee corporations, clusters, governmental and non-governmental organizations and other syndicates supporting SMEs, industrial and technology parks, business incubator houses, etc.

In 1999 a new cluster law was passed defining the role of the regions in determining the features of clusters. The regions had the opportunity to define for themselves the exact and quantitative criteria for cluster qualification. The law stated the goals that should be considered when supporting clusters. These are as follows:

- diffusion of information technology,
- joint projects of firms,
- trainings,
- penetration into new markets,
- improving environmental conditions,
- developing infrastructure,
- providing jobs.

In this form there is no cluster management organization. The enterprises have complete independence when joining the cluster. They apply jointly for regional funds with projects in connection with their strategic goals but otherwise they act as competitors.

There are several local/regional/national institutions which are in connection with the Italian clusters.

The most common institutions are:

- *Credit guarantee corporations*, i.e. supporting groups which help the SMEs to be solvent. These institutions are based on government subsidies and the contributions of the members. The rate of governmental subvention is about 30% nowadays. In the past the subvention was 100%. Usually 50% of the subsidy is now guaranteed by the local banks (if the relation of the entrepreneur and the bank is fair).

- *Export syndicates* are organizations established by the firms of the same supply chain in the region. These syndicates are funded by entry and regular membership fees.

The goal of the syndicate is to enhance the export activities of the members with export supporting services (foreign trade management, legal consulting, translation, interpretation, administration, export credit guarantees, market information, market organization, co-branding usage, etc.). According to a law of 1991 the export syndicates can be supported if they have at least 5 members, have a deed of foundation, a business plan, and the sum of assets of the members reaches a certain level. If all the conditions are met, the state covers 40% of the annual budget (if the budget does not exceed a maximum amount). This amount depends on the number of members).

- *Service centers* provide mainly market and market-related information (about R+D activity, prices, patents, regulations, markets, products, etc.) or provide services (education, training, software planning support, business trips, participation in and organization of fairs, quality assurance and audit, etc.) for the cluster members. These centers are established by public funding from the government and the trade unions. State subventions can be 30% of the budget of these centers.

The key feature of the Italian clusters is that they rely on a highly developed institutional environment. The traditional business federations, trade unions and other supporting organizations stabilize and facilitate the development of the clusters. These institutions lobby for the cluster at the local, regional or macro levels for subsidies.

Several other institutions can be linked to a cluster. The role of a region's research centers and universities related to the industry where the cluster operates is of great importance. These institutions train the professionals for the SMEs and help them to join their R+D activities. Analogous to this is the role of training colleges and technical institutes which provide the workforce required for the region.

The Danish model

The Italian model was influential worldwide but other types of cluster development have also emerged.

In many European economies cluster development has become a task for the national economic policy. Especially successful examples are the Danish clusters in the Jütland area. Corporate cooperation was not common in the industrial history of Denmark. First of all the biases had to be diminished and a special form of network had to be defined which was adapted to the Danish enterprises. In this new form of network the firms were able to follow their interests. The Danish government financed the clustering projects with the assistance of network agents to find the partners and create cooperation. As a result of the clustering policy about 1,000 networks were established (with an average 5 to 10 firms in a net) and a rapid development of the peninsula started. The experience showed that the primary objectives of successful cooperation were based on penetration into new and special markets. Only after this step can other services and procurements be funded²¹.

The Swedish model

The Swedish info-electronic cluster in Linköpping was established in a way similar to the Danish clusters. The specialty of this cluster was the tight cooperation with the city's university (20,000 students – 32% being engineers), which founded the cluster by creating three scientific parks and business incubators, and with private and public research centers. Domestic and foreign capital flowed into the region and Ericson and Nokia settled down there. The huge and growing market of the industry of electronics and informatics combined with skilled workforce and great research possibilities and subsidies attracted the investors to the region and stimulated SMEs. Five clusters were created in the region with the cooperation of the university, local and regional government and with local banks. These clusters included the top-end companies and the related SMEs. With this process of clustering Sweden's most developed industrial district was born.

The Austrian model

In Austria^{22/}, supply-chain-based clustering has become dominant. In this form of clustering large integrator corporations find their network of suppliers. They tend to

²¹ / Dahl, M.S; Dalum. B.: The Construction Cluster in Denmark, P. 179-2002. in OECD 2001.

²²/ http://www.unido.org/doc/count_gen_assoc?cout_tag=AUS: SME – Austria Research and Development,

improve their relations by creating new projects, planning and facilitating them. The automotive cluster of Steyr has highly influenced the clustering policies of Hungary (especially in the Western Transdanubian region).

In 1996 the three leading firms of vehicle manufacturing, research, logistics and marketing created a network (Chrysler-Eurostar, Steyr-Daimler-Puch, and AVL-List) in Steiermark. This network consists of more than 120 suppliers with 11,000 skilled employees. The evolution of the cluster can be divided into 7 steps.

In June 1997, a series of technological conferences was held with the participation of university experts and automotive engineers in the city of Graz. The subject of the conference was automotive electronics, a key innovation field, and all the 'small' (SMEs) and 'large' (multinational companies) innovators and inventors were invited.

As a second step Magna International Inc., a worldwide manufacturer of automobile components with more than 30,000 employees, settled in the region and promised to create 300 new jobs. The local authority of Steiermark assisted the investment and provided support to develop regional infrastructure in order to satisfy the needs of the automotive company.

In the third phase the cluster joined the EU's innovation program. The goal of this program was to support the SMEs in order that the suppliers of the automotive industry will be able to create innovative technologies for the region. By doing this they can improve the quality of products, enhance productivity and reduce costs. The EU support program was focused on the following:

- supporting innovative work practices,
- connecting university research with the activities of companies,
- forming joint marketing strategies.

In the fourth step, Johnson Control, a worldwide automotive supplier of seats and equipment, moved to the region and created 150 new jobs in its new plant.

The education/training and communication campaign was started in 1997. In this year the cluster organized 30 workshops with 980 participants. Most of the trainings held were related to ISO, the launching of the Euro, benchmarking, logistics and informatics. The cluster has its own webpage providing information

about the activities of the members with more than 860 links. The organization has its own CD publication about their operations as well.

In the sixth step General Motors and Opel selected Steiermark as a central place for introducing their new models and innovation. They chose the region because the infrastructure, the conference and representation facilities and the natural environment were suitable for presenting the dynamics of their cars.

The seventh step was about creating a database for the cluster partners. This database is not just a partner list but it contains all the detailed functions as well. The members of the cluster are supported by the following services:

- getting together companies and organizations with the same interest,
- providing know-how for all the members,
- assistance in involving new partners.

The cluster is financed through regional, national and European subventions and it provides free services to its members.^{23/}

Clusters in Eastern Europe

The Eastern European governments also realised that the successful growth of their national economy depends on the support of local clustering initiatives. At the OECD East West Cluster Conference it was declared that the Eastern European countries (considering their common economic history) must face similar problems and must follow the same path in order to develop^{24/}. The final document of the conference emphasized the following actions:

- The first strategic step of clustering is supporting the culture of cooperation. As shown by the examples of Slovenia, Slovakia, Poland and the Czech Republic, the culture of partnership is weak. Future partner institutions will have a significant role in disseminating these ideas.
- The entrepreneurial environment must be developed. This means the facilitation of access to credit, strengthening education and research, supporting joint export activities of the firms, and a benevolent environment for industrial parks and for other business sites and facilities.

^{23/} Results of the automotive cluster in the last few years:

- 10,000 new jobs (4,000 in SMEs),
- 60% of the products are exported (30% of these products are manufactured in Steiermark),
- More than 1 billion USD was invested by the automotive companies in Steiermark.

^{24/} Documents of the OECD East West Cluster Conference. Udine, 2002.

- Authorities, local governments and public institutions must actively support the local initiatives but this does not mean the enforcement of top-down design. Every state should create its own official policy of support without favoring any existing models. Financial and methodological support must be concentrated on the joint operations of local firms. Subsidies can be decreased when the networks are already operating. (Slovenia planned to reach this phase in 5 years.)

Slovenia is a leading country in Eastern Europe in supporting enterprise networks and cooperation^{25/}. The Slovenian government declared its SMEs supporting policy in 1990. In 1999 a cluster survey was performed to investigate the possibilities and the favorable tools of clustering. The survey showed that there is a link between the members of vertical chains and the companies in the same horizontal industry but the foundations of networks are missing. The supporting structure is weak, the local authorities do not have the tools to support the local firms. Partnerships between the enterprises and universities, local social and business partners are not satisfactory. As a result of the survey, the Slovenian government created a five-year program of cluster development. In the program the Ministry of Economy provides training for the employees who will be involved in cluster development. Furthermore, five groups of SMEs will be financed and the connection with research centers and universities will be ensured by the government. These groups can apply for funds in the following fields: searching for new markets, joint marketing activities, technological innovation, product development. Two pilot programs were launched in the automotive industry. In the last few years clusters were established in the textile and furniture industries. Each cluster has about 30-40 members.

Hungarian cluster initiatives

There are about 30-35 clusters operating in Hungary which receive subsidies from the government. In addition, there are several spontaneous business networks, created by the cooperation of suppliers or distributors.

Related to international practice, the Hungarian process is based on top-down initiatives. The entrepreneurial alliances in Hungary are more or less connected to the institutional framework. These co-operations are not separate legal entities. Usually a greater organization hosts them. These organizations can be business or non-profit organizations or regional business development agencies.

^{25/} Executive Summary (Slovenian) – Business clusters. Promoting Enterprise in Central and Eastern Europe, 18/07/2005, http://www.oecd.org/searchResult/0,2665,en_2649_201185_1_1_1_1_1_00.html

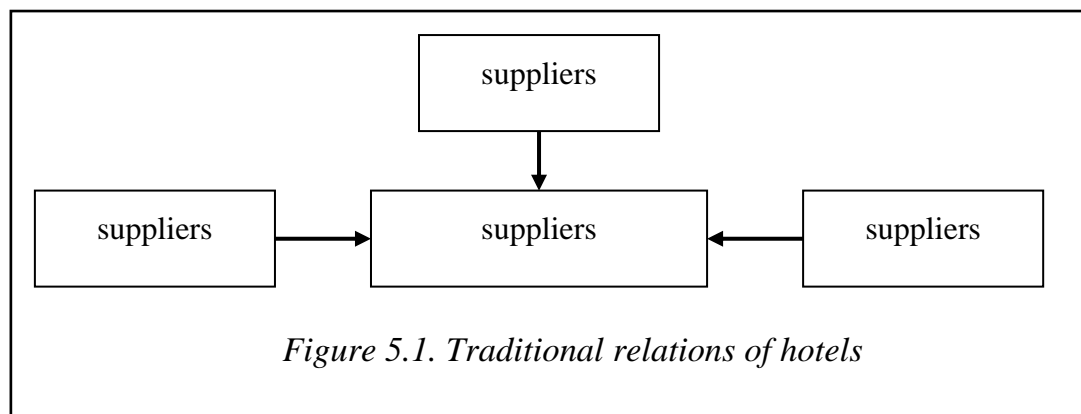
The Hungarian government has proclaimed its commitment to clustering. There is no special institution to support clustering: all the tasks are performed by the Regional Development Holding which is an intermediary agency. There has not been any need for cluster-specific regulations because the operations of the clusters can be handled by the existing private and corporate laws.

Cluster politics is included in National Development Plan I and II and in the Operative Programs of Economic Competitiveness and Regional Development.

5.1. The Role of Tourism Clusters

The role and relevance of tourism in regional development, goal of tourism clusters and their economic relevance

After the second half of the 1960s and in parallel with the rising living standard, the economic weight of the tourism industry increased. The profitability of the industry has grown in Western Europe while the structure of business relations remained unchanged (Figure 5.1.)



After the waves of recession in the late 1980s, the industry stopped growing. As an effect of the pressures for development, an enlargement of the vertical and horizontal services was performed to improve the value-adding ability of the industry (Figure 5.2.)

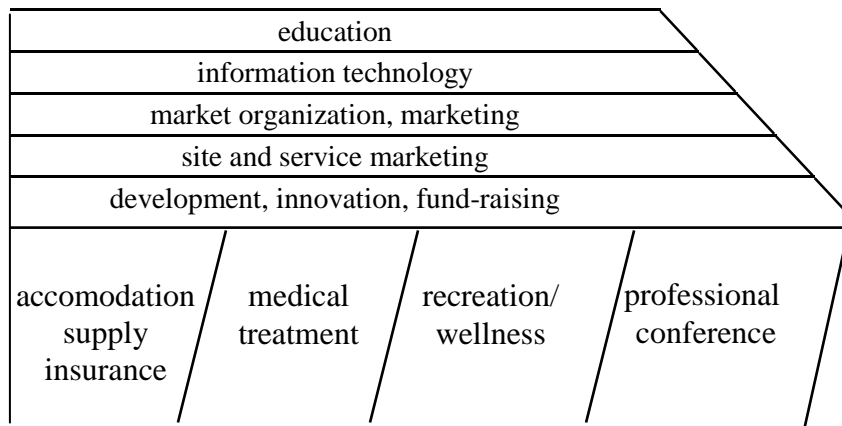


Figure 5.2. The value-increasing model of tourism services

As a result of the above:

- a) One of the first clusters was the hotel cluster. In this basic cooperation the hotels use a common booking and marketing system.

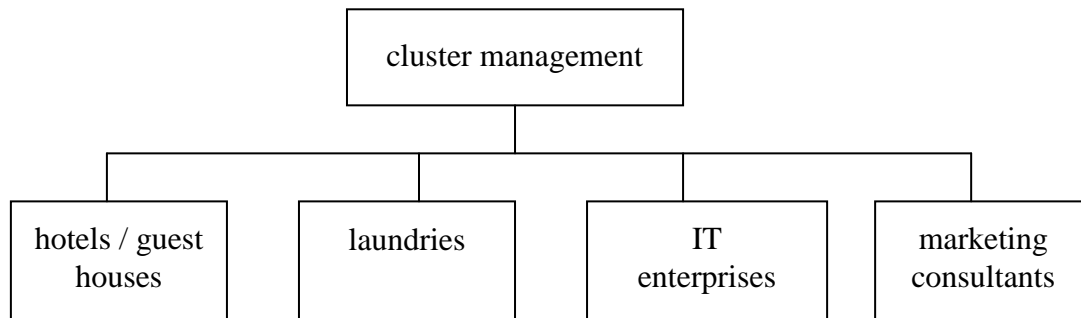
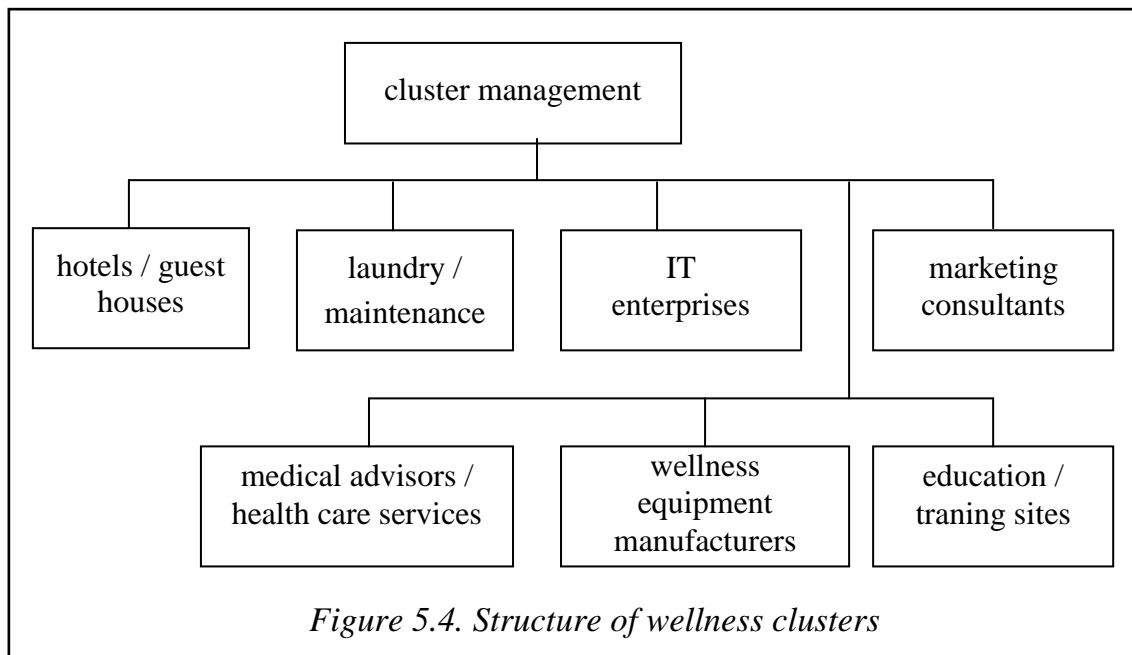


Figure 5.3. Structure of a traditional hotel cluster

- b) A more complex entity was established by the wellness clusters. In these co-operations the main goal was not to increase the number of bed nights but to provide new services which were not in the range of services of traditional hotels.



Wellness clusters have become popular mainly in German-speaking areas (Table 5.1.)

Table 5.1.

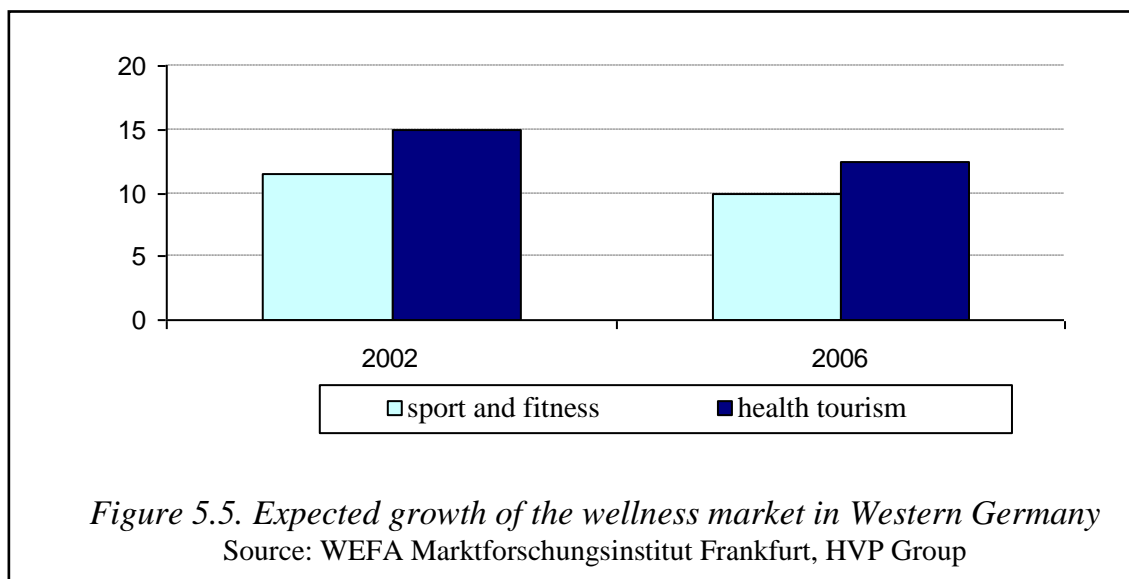
Structure of the Alpine-Wellness Cluster

Cluster		
Name	Members	Address
<i>Alpine-Wellness Cluster (Austria)</i>	<ul style="list-style-type: none"> • 3 spas • wellness provider • 87 catering units and accommodations • 2 advisory organizations 	www.wellness-cluster.at

- c) For the purpose of better utilization of room capacities and higher added value services, health tourism clusters were established in the 1980s.

The dynamic growth of health tourism clusters can be clearly seen from the statistics. 57 % of Austrian health tourism travels were domestic and 43 % were travels abroad (Österreichische Statistische Amt, 2000). Between 1990 and 2002 the number of health tourists in Austria increased by 164 %; bed nights have risen from 2.2 million to 3.4 million at the thermal hotels (2002).

Healthcare tourism expenditures are estimated to be 2.5 times higher than industrial expenditure by Western European (and especially German) experts in the near future (Figure 5.5.)



According to the results of a survey performed in 12 Western European countries (Grönemeyer, 2001), the potential demand for medical services doubled between 1990 and 2001. According to the statistics, more than 16 million consumers used the services related to healthcare tourism. Three million bed nights (of a total of 270 million per year) can be related to healthcare programs (70% with wellness and 30% with medical treatments) (European World Travel Monitor, 2001).

There are long traditions of medical and thermal tourism in Germany, Austria and Switzerland.

Table 5.2.

Healthcare clusters in Austria

Cluster		
Name	Members	Address
Healthcare Cluster (<i>Gesundheits-Cluster</i>)	<ul style="list-style-type: none"> • 167 catering units and accommodations • 3 spas • 12 healthcare providers • 27 therapeutics enterprises • 12 pharmacies • 8 industrial enterprises • 2 advisory organizations 	www.gesundheit.at
Healthcare Cluster Upper Austria (<i>Gesundheitscluster Oberösterreich</i>)	<ul style="list-style-type: none"> • 33 healthcare companies (hospitals, sanatoriums) • 112 tourism services 	www.gesundheits-cluster.at
Health Tourism Cluster (<i>Cluster Gesundheitstourismus</i>)	<ul style="list-style-type: none"> • 84 catering units and accommodations • 14 healthcare enterprises • 3 advisory organizations • 6 spa services 	www.wellbeingdestination.com www.wellbeing-austria.com

As a result of the development of the industry, training and educational processes started in the Austrian educational institutions in the field of medical and spa tourism. (www.ooe.gv.at) (www.bodytrainer.at).

Services provided by the cluster to its members are the following:

- quality assurance, quality management,
- branding and marketing sites,
- operation of distribution systems,
- public financing of development projects and project management.

- d) The homeland of rural (or agro) tourism is Italy where close to 160,000 members (hotels, training centers, touristic enterprises) cooperate in several clusters mainly in the regions of Toscana and Veneto.

Table 5.3.

Some of the major European tourism networks

Name of the organization	<i>European Cities Tourism, ECT</i>
Type and purpose of the organization	<p>The ECT network aims at strengthening city tourism through communication and exchange of experience.</p> <p>Today, it gathers more than 95 cities (including Budapest) across 30 European countries, and it represents the cities' interests to the EU policy makers.</p> <p>The network comprises active, associate and affiliate members.</p> <p>Active members may enter the organization through invitation.</p> <p>The national "TOURINFORM" offices may become associate members of the organization, so they can join all projects and activities of the organization.</p> <p>The difference between active and affiliate members is that affiliate members have a consultative role in the general assembly only.</p> <p>The ECT organizes a conference for its members every year.</p> <p>The most important activity is making the participating cities' marketing activities more effective (e.g. City Card) through the experience of other cities.</p> <p>Working groups have been established which focus on:</p> <ul style="list-style-type: none"> • information technology, • R+D, • statistics, • communication, • City Cards and • EU topics.
Home page	www.europeancitiestourism.com
e-mail	a.vrydagh@brusselstourism.be

Name of the organization	<i>European Tourism Industry Network, ETIN</i>
Type and purpose of the organization	<p>ETIN is a virtual network, which has been established to help the European Commission to communicate with the organizations of tourism industry. Today, it has approx. 50 members.</p> <p>Its main function is to help legislative processes with taking into consideration the interests and the opportunities of the members of the tourism sector.</p> <p>There is no formal organizational structure, the organization is based on voluntary work.</p> <p>Every organization or individual interested in tourism can join the ETIN by the adoption of the constitution.</p> <p>Number of member organizations: 870</p>
Home page	-
e-mail	etag-euro@btconnect.com
Name of the organization	<i>European Centre for Agrotourism, ECEAT</i>
Type and purpose of the organization	<p>ECEAT was established in 1991 and is the leading European organisation in the field of small-scale sustainable tourism with a special attention to rural areas and organic farming. Today it has members in 15 European Union countries.</p> <p>In the center of ECEAT some full-time employees work.</p> <p>The primary activities of the organization include: ensuring the coordination between the (potential) project partners and lobbying in connection with the environmental impacts of tourism, emphasizing the primacy of environmental concerns.</p> <p>The 2 leading organizations of ECEAT are: the ECEAT Czech Republic and the ECEAT Netherlands, who focus on the freshly joined and the older EU member states.</p> <p>The operation of the organization is primarily funded by project funds</p>
Home page	www.eceat.nl
e-mail	eceat@eceat.nl

Name of the organization	<i>Via Alpina</i>
Type and purpose of the organization	<p>The organization integrates about 30 climber associations and advertising companies.</p> <p>The Via Alpina was established under Interreg IIIB. The aim of the organization is to help the collaboration of travel routes and accommodations that already exist in the Alps.</p> <p>The project was supported by the EU until 2006, then it had to become self-sustaining.</p> <p>Its primary objective is to spread multilingual information material for tourists, especially in the peripheral, less visited areas.</p> <p>Major projects include:</p> <ul style="list-style-type: none"> • Preparation of the brochures of the 5 main routes in 5 languages. • Creating a new website with interactive maps. • Making thematic and climbing guides. • Cooperation with the representatives of the printed and the electronic media.
Home page	www.via-alpina.com
e-mail	info@via-alpina.com
Name of the organization	<i>Latvian Country Tourism Association 'Lauku celotajs', LCTA</i>
Type and purpose of the organization	<p>LCTA was established in 1993 with the participation of 280 rest and recreation facilities.</p> <p>Its primary purpose is to promote the development of rural tourism especially the establishment of modern recreational facilities in natural rural environment.</p> <p>The main activities of the organization:</p> <ul style="list-style-type: none"> • marketing, market research, • quality assurance of tourism products, • operation and maintaining of electronic booking system, • representation of companies interested in tourism. <p>The LCTA has created its own “green label”, which can be used by those tourism actors only who support the values of the environment as much as possible.</p> <p>Regular conferences and workshops are held on the topic of rural tourism.</p>
Home page	www.traveller.lv
e-mail	asnate@celotajs.lv

5.2. Tourism Networks and Clusters in Hungary

After the Second World War, the multiphase nationalization and the corresponding ideology strove to eliminate the entrepreneurial spirit in an embryonic phase. As a result of the co-operative movement, an enormous aversion emerged against the forms of cooperation which were really successful in free societies. So it is easy to understand that the first cluster initiatives appeared only in the early 1990s. This was a time-lag of more than two decades in contrast to Western European societies. The reason for this was that the vast majority of domestic micro, small and medium-sized enterprises were established only in the late 1980s and early 1990s after the disintegration of national corporations and privatization. The new enterprises were averse to any forms of cooperation. Therefore the recognition of the necessity (and later the pressures) of network cooperation was far too late. The Regional Economic Development Plan (STT-RE-1) of the Széchenyi Program gave the first impetus to clustering in 2000.

The goal of the program was to initiate the establishment of geographically concentrated cooperation in the same industry in order to jointly produce new products, develop manufacturing, sales, R+D and marketing activities. The program aimed to give financial support to developing and operating cluster management organizations, institutions, and related ITC systems for the training and services of the clusters.

Ranges of candidates were (www.gkm.hu/dokk):

- domestic-based companies having a legal entity,
- non-profit organizations
- foundations,
- public funds, and
- consortia of the above.

Grants could be applied for the purpose of:

- cluster establishment,
- creating cluster management organization,
- supporting the operations and services of cluster management;
- development programs of collaborative projects in facility, technology and production development,

- quality assurance and other techniques to achieve a certain standard which helps SMEs in the market;
- green technologies, innovation in energy-saving and workplace healthcare;
- training and educational programs to obtain new technologies and procedures;
- management training for SMEs in several fields (for ERP and CAD/CAM systems);
- creating regional entrepreneurial information systems, databases and updating of databases;
- gathering information and consultancy;
- international networking at trade fairs and congresses.

After the elections of 2002 the new government could not continue the development projects of the Széchenyi Program. The clustering projects were not supported so the initiatives lost their momentum.

Wide-range clustering is blocked by several factors in Hungary. Some of them are fears of the entrepreneurs, lack of trust, lack of economic policies supporting clustering and lack of knowledge.

Despite the problems and difficulties almost two dozen clusters and cluster initiatives are operating in Hungary (<http://klaszter.lap.hu/index.html>). As shown by the regional analysis (Tables 28 and 33), most of the clusters are located in Transdanubia. In this region in addition to the higher morale of entrepreneurs, the consistent sub-regional programs of economic development provide support for clustering.

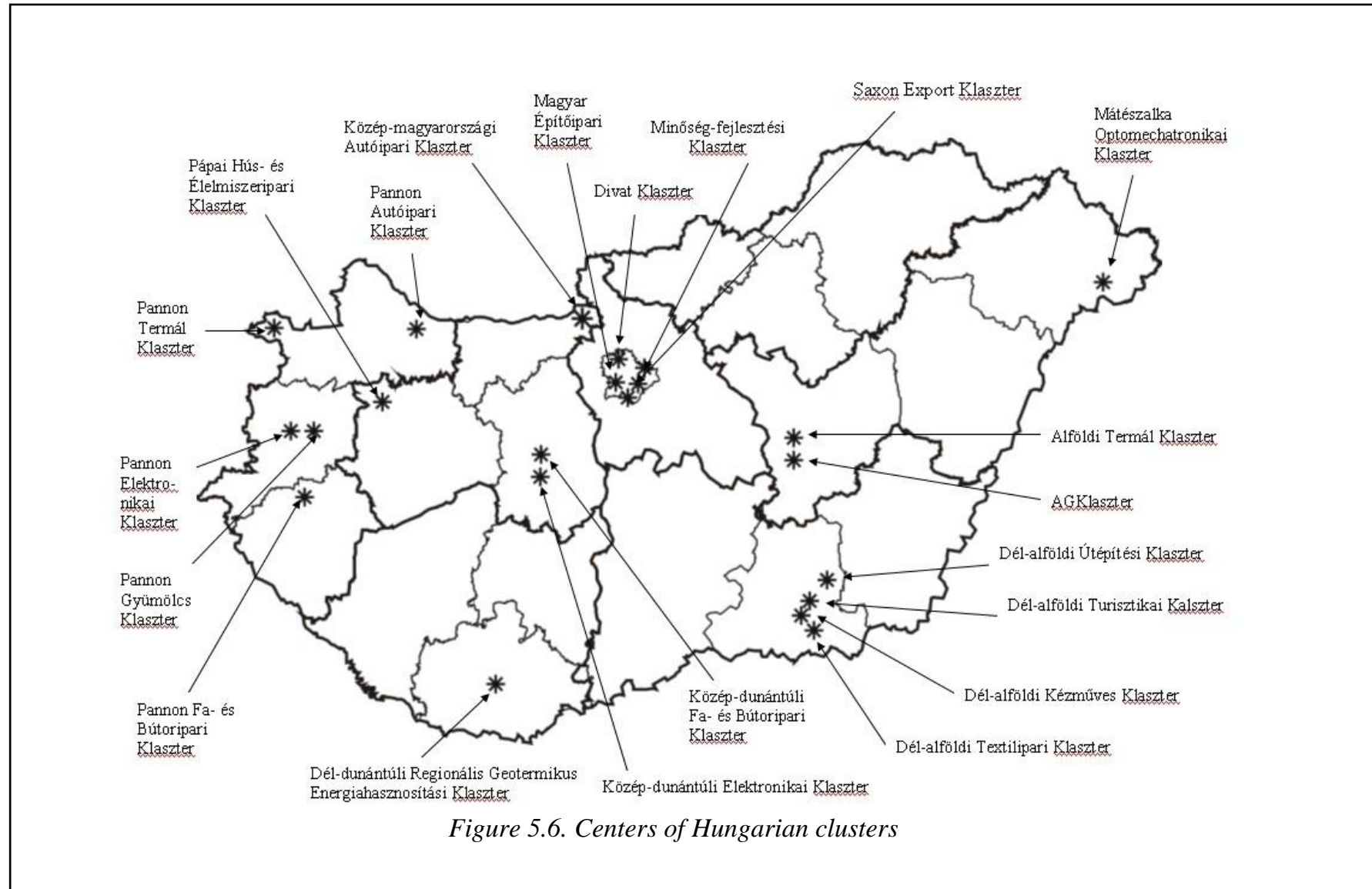


Table 5.4.

Hungarian clusters, Hungarian initiatives

Region	Name of cluster	Home page of cluster
Western Transdanubia	<ul style="list-style-type: none"> • Pannon Automotive Industry Cluster (Pannon Autóipari Klaszter) • Pannon Thermal Cluster (Pannon Termál Klaszter) • Pannon Electronics Cluster (Pannon Elektronikai Klaszter) • Pannon Fruit Cluster (Pannon Gyümölcs Klaszter) • Pannon Timber and Furniture Industry Cluster (Pannon Fa- és Bútoripari Klaszter) 	<ul style="list-style-type: none"> • www.panac.hu • www.nyugatudunantuliregio.hu/gyogy/pannon.htm • www.elektrocluster.hu • www.pgk.hu/pgk/gyumolcsklaszter/ • www.panfa.hu
Southern Transdanubia	<ul style="list-style-type: none"> • Southern Transdanubia Regional Geothermal Energy Utilization Cluster (Dél-dunántúli Regionális Geotermikus Energiahasznosítási Klaszter) 	<ul style="list-style-type: none"> • www.kdrfu.hu/doc/klaszter.doc
Central Transdanubia	<ul style="list-style-type: none"> • Central Danubia Electronics Cluster (Közép-dunántúli Elektronikai Klaszter) • Central Danubia Timber- and Furniture Industry Cluster (Közép-dunántúli Fa- és Bútoripari Klaszter) • Pápa Meat and Food Industry Cluster (Pápai Hús- és Élelmiszeripari Klaszter) • Mezőföld Building Industry Cluster (Mezőföldi Építőipari Klaszter) 	<ul style="list-style-type: none"> • www.kdrfu.hu • www.papaihus.hu • www.mefek.hu

Region	Name of cluster	Home page of cluster
Central Hungary	<ul style="list-style-type: none"> Central Hungary Automotive Industry Cluster (Közép-magyarországi Autóipari Klaszter) Hungarian Building Industry Cluster (Magyar Építőipari Klaszter) Fashion Cluster (Divat Klaszter) University Cluster (Egyetemi Klaszter) Quality Improvement Cluster (Minőségfejlesztési Klaszter) Saxon Export Cluster 	<ul style="list-style-type: none"> - • www.magypitoipar.hu • www.divatklaszter.hu - - -
Southern Great Plain	<ul style="list-style-type: none"> Southern Great Plain Road Construction Cluster (Dél-alföldi Útépítési Klaszter) Southern Great Plain Thermal Cluster (Dél-Alföldi Termál Cluster) Southern Great Plain Artisan Cluster (Dél-Alföldi Kézműves Klaszter) Southern Great Plain Textile Industry Cluster (Dél-Alföldi Textilipari Klaszter) 	<ul style="list-style-type: none"> - - - -
Eastern Great Plain	<ul style="list-style-type: none"> Eastern Great Plain Thermal Cluster (Észak-Alföldi Termál Klaszter) Mátészalka Optomechatronics Cluster (Mátészalkai Optomechatronikai Klaszter) 	<ul style="list-style-type: none"> - -
Northern Hungary	No clusters!	-

Pannon Thermal Cluster

The Pannon Thermal Cluster is operating in Western Transdanubia. The cluster was established in 2001 in order to support the regional organizations interested in the development of tourism. The main goals of the cluster were:

- creating new networks in the field of medical and spa tourism,
- finding the funds required for research projects,
- enhancing the innovation potentials and activities of the regional enterprises,
- As a result of the development programs new market segments with higher demands and solvency can be targeted. With this development new complementary products and services can be created,
- increasing the added value of the cluster,
- performing complex and integrated investments for medical and spa enterprises in order to have a leading role in tourism and to create a multiplication effect in other sub-sectors of tourism,
- creating a new, unified regional identity or image.

The founding enterprises are dominant actors in the region's spa and wellness tourism (in terms of capacity, visits and bed nights) and they create more than 50% of the national turnover of thermal tourism.

The agreement of collaboration was signed by 27 members. Now the cluster has 33 members (www.nyugatudunantuliregio.hu/gyogyt/panac.hatm).^{26/}

In the establishment of the cluster the Austrian model was followed. In spite of that, collaboration has achieved modest results in the field of marketing only.

^{26/} Members of the cluster are: Nyugat-dunántúli Regionális Fejlesztési Tanács, Balatoni Fejlesztési Tanács, Nyugat-dunántúli Regionális Idegenforgalmi Bizottság, Balatoni Regionális Idegenforgalmi Bizottság, Magyar Turizmus Rt. Nyugat-dunántúli Regionális Marketing Igazgatóság, Magyar Turizmus Rt. Balatoni Regionális Turisztikai Projekt Iroda, Állami Szívkórház, Aquaprofit Hungary Kft., Borgáta Község Önkormányzata, Büki Gyógyfürdő Rt., Danubius Hotels Group, Flexum Rt., Gránit Gyógyfürdő Kft., Lipóti Termál Kft., Mesteri Termál Kft., Sárvári Gyógyfürdő Kft., RAS Kft. Kapuvári Gyógyfürdő, VASIVÍZ Rt., Pannon Víz-, Csatornamű és Fürdő Rt., Állami Szanatórium Balfi Gyógyfürdőkórháza, Sá-Ra Termál Kereskedelmi és Szolgáltató Kft., Kehida Termál Gyógyfürdő Kft., Zalaegerszegi Városi Strandfürdő és Fedett Uszoda Kft., Szent András Állami Reumatológiai és Rehabilitációs Kórház, Szemrédi Turisztikai Tanácsadó Bt., Budapesti Műszaki és Gazdaságtudományi Egyetem TKK, Smed-erg Bt., Csorna Város Polgármesteri Hivatal.

Southern Great Plain Medical and Thermal Spa Association

The Southern Great Plain Professional and Consulting Association of Thermal Clusters was established in 2002 in Gyula. The goal of the cooperation was to improve the services of the regional spas (Gyula, Orosháza-Gyopárosfürdő, Békéscsaba, Békés and Szarvas). The establishment was supported by the previous development programs of the Széchenyi Program. The cooperation between the members is in an initial stage (01.09.2005). The association presented its intentions and ideas in the last two and a half years. The form of association gives the opportunity for systemized communication between the members but does not represent a commitment to cooperation. The association gave the developers the task to analyze the region's touristic potential until the fall of 2005. Currently the determination of the hierarchy of development goals of the cluster is in progress.

Glossary

Supplier: A supplier is an enterprise which provides components or subassemblies to the final producer in the manufacturing or assembly phase of production. The products produced by the suppliers are not sold on the market. These components are sold directly (or indirectly through an integrator company) to the final producer. These relationships are controlled by supply contracts.

Integrator of supply: A medium-sized or large enterprise manufacturing components with the necessary capital, management skills, R+D potential to unite the suppliers (usually SMEs). This company can coordinate the tasks of product development, funding of joint projects of new products, new technologies, design and marketing activities.

Supply chain: A consciously designed and legally controlled system of economic relationships between enterprises (in production, service, R+D+I sectors) to achieve a common goal.

Scope of work: The field where the activities of the cluster are focused.

Fordism: The characteristics of Fordism are Taylorist work, production line, mass production and consumption, wage system based on work efficiency.

Indicator: An index that can be used to evaluate programs or projects.

Cluster: A consciously designed and legally controlled separate legal entity of geographically concentrated and cooperating companies.

Cluster Management Organization: A business entity which provides services to the members of a cluster according to the deeds of foundation and the bylaws of the cluster.

Subsidiary company: A company that is fully or partly owned and controlled by another company called the parent company.

NUTS 2: The second level of the geocode standard of regions which is developed and regulated by the EU.

Postfordism: The characteristics of postfordism are: functional and quantitative flexibility, innovation, team work and just-in-time production.

Project: Activities performed in a certain period of time with a fixed budget to achieve a defined goal.

Project manager: A person on behalf of the project applicant who is responsible for the realization of a project.

Business network: A consciously designed network of profit-oriented and non-profit organizations in order to create a certain value.

Vertical integration: A network of interconnected business units based on a certain technological sequence.

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