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Contribution of Clusters to the Competitiveness of Companies: Revelation and Evaluation

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This article is dedicated to the analysis of clusters and methodological aspects for evaluation of their contribution to the competitiveness of economy sectors. The conception of clusters is associated with the last (7-8th) decades of the 20th century, when competitive sectoral networks started to form and develop in the USA and Europe. These networks embraced traditional sectors (for example, chair cluster in Italy) and high-tech sectors (for example, Silicon Valley in the USA). It is quite obvious that economic value of these networks and interorganizational relations are enormous for clusters tend to improve productivity, innovative potential, entrepreneurial abilities and competitiveness of companies. In general, the widespread conception of competitiveness is associated with comparative (relative) social, economic, political, technological and other positions of companies, sectors and countries with regard to other companies, sectors and countries. Competitiveness is also a complex phenomenon of economy which has at least three dimensions: 1) macro, 2) mezzo, 3) micro. Macro level is associated with national economy, mezzo level – with regional or sectoral economy, micro level – with companies or business units. Each level has its own specifics and unique indicators that are used in the process of competitiveness evaluation. Competitiveness evaluation is economically important for various reasons: first of all, it enables to identify the strong and weak points of economy in order to ensure sustainable and harmonious growth; secondly, it determines the preconditions to create efficient stimulation instruments for market participants, as it reveals the competitive advantages of products, services, resources, business processes, management strategies, etc. and enables to forecast the ability of companies to survive under competitive pressure. Evaluation of competitiveness is also a complex multi-stage process which must take into account different quantitative and qualitative factors which determine the ability of certain companies, sectors, regions and countries to compete and gain competitive advantage with regard to analogical units. As various partnerships or networks (including clusters) gradually become a requisite, concurrent and integrative part of competitive knowledge-based economy, their contribution to competitiveness must not be ignored. Thus, this scientific research study aims at developing a principal model of competitiveness evaluation that shall integrate the contribution of clusters.

Keywords: *clusters, competitiveness, competitiveness evaluation, competitiveness evaluation models.*

Introduction

Evaluation can be described as a systemic process that determines value, relevance, weight, etc. of an object in comparison to the chosen standard, while using appropriate (definite, clear) evaluation criteria and methods. It must be emphasized that competitiveness evaluation process fits in this definition, yet it has its own specifics – it is often hard to define the standard of competitiveness, since the ability to compete in terms of growing GDP per capita, favorable business climate, positive international trade balance, high economy-related quality of life, etc. (macro level factors) or innovative business solutions, high quality standards, wide choice and favorable cost-benefit ratio of consumer goods and services, etc. (micro level factors) are relative.

The concept of competitiveness and various measures to gain, maintain and improve competitiveness is a problem of various scientific works (Bresnahan, Gambardella, 2004; Snieska, Draksaite, 2007; Brown, 2000; Rutkauskas, 2008; Porter, 2000, 2008; Snieska, Bruneckiene, 2009 et al.), yet, it is also important to evaluate or measure competitiveness. Different approaches towards measurement of competitive position exist, but most researchers agree that methods and models of competitiveness evaluation must be flexible and very detailed (Porter, 2004; Blanke, Paua, 2004; McArthur, Sachs, 2002 et al.). The major international organizations in the field of economics have suggested their own guidelines or methods for competitiveness evaluation (Massachusetts Technology Collaborative, 2010; International Institute for Management Development, 2010; World Economic Forum, 2010; Heritage Foundation, 2010; OECD, 2010, etc.). Yet, these guidelines and methods often do not take into account such competitiveness factors as clusters, networks or other interorganizational structures, even though many academic (theoretical) works are dedicated to the analysis of clusters and prove their contribution to the competitive potential of companies, sectors, regions and countries. This study aims to integrate this significant contribution into the process of competitiveness evaluation.

The object of the study is the contribution of clusters to the competitiveness of companies and sectors.

The aim of the study is to analyze the methodological aspects of cluster-related competitiveness evaluation.

The objectives of the study are:

1. To define the concept of competitiveness evaluation.
2. To analyze and compare the models of competitiveness evaluation.
3. To integrate the influence of clusters into the model of competitiveness evaluation.

The methods of the study are:

- Logical and comparative analysis of literature.
- Synthesis and deduction.
- Graphical methods.

The methodology of the research was based on holistic and systematic approach.

Competitiveness Evaluation: Various Practical and Methodological Aspects

Different theoretical and applied literature sources tend to explain the conception of competitiveness in a variety of – sometimes even conflicting – ways. According to World Economic Forum (2010), competitiveness can be perceived as a capability of a country to secure the growth of GDP per capita (economy-related quality of life). On the other hand, National Competitiveness Council (2001) defines the term of competitiveness as a country's ability to successfully and efficiently operate, compete in international markets, at the same time maintaining a high quality of life and well-being of its citizens. As must be noticed, these concepts embrace the macro- level, yet the concept of competitiveness can be defined on the micro- level as a potential of companies and business ventures to compete locally, regionally, nationally and internationally (Navickas, Malakauskaite, 2007, 2008, 2009a, 2009b; Malakauskaite, Navickas, 2010). Evaluation of competitiveness is a complex multi-stage process which must take into account different quantitative and qualitative factors that determine the ability of companies, sectors and countries to gain and maintain competitive advantage with regard to analogical units. As various partnerships, relation networks (including clusters) gradually become a requisite, concurrent and integrative part of competitive knowledge-based economy, their contribution to competitiveness must not be ignored.

Popa and Pater (2004) suggest that competitiveness of companies (sectors, regions, countries) can be expressed by a function (1) of various competitiveness constituents.

The main advantages of this evaluation model:

- Evaluation model embraces both quantitative (material and financial resources, etc.) and qualitative (social and cultural resources, etc.) factors of competitiveness.
- Evaluation model embraces inner (company) and outer environment, micro- and macro- competitiveness.

The main disadvantages of this evaluation model:

- Qualitative competitiveness factors are subjective, thus they are difficult to evaluate in quantitative indicators.
- Competitiveness factors differ in various features such as relevance and influence, but their weight is the same in a formula.

C = Cnat + Cdsc + Cpar + Ctec + Ctmi = CRnat + CRhum + CRsoc + CRmat + CRinf + CRfin (1), where

- C – competitiveness evaluation (in points) as a sum of points attributed to the constituents.
- Cnat – natural competitiveness, which is characterized by natural environment.
- Cdsk – demo-social competitiveness, which is characterized by demographic and socio-cultural environment.
- Cpar – political, administrative and regulative competitiveness, which is characterized by political environment.
- Ctec – technological (innovative) and economic competitiveness, which is characterized by business environment.
- Ctmi – technical-militaristic competitiveness, which is characterized by militaristic environment.
- CRnat – competitiveness formed by natural resources used by (accessible to) a company (economy sector).
- CRhum – competitiveness formed by human resources used by (accessible to) a company (economy sector).
- CRsoc – competitiveness formed by social resources used by (accessible to) a company (economy sector).
- CRmat – competitiveness formed by material resources used by (accessible to) a company (economy sector).
- CRinf – competitiveness formed by information resources used by (accessible to) a company (economy sector).
- CRfin – competitiveness formed by financial resources used by (accessible to) a company (economy sector).

Even though the competitiveness evaluation model by Popa and Pater (2004) does not identify the contribution of clusters in the form of competitiveness constituent, it might be treated as part of Ctec, for the influence of clusters first of all manifests itself through the formation (development) of new companies, business ventures, growth of innovative potential, entrepreneurship and efficiency of operation.

On the other hand, clusters might be treated as a higher level factor of competitiveness which shapes the estimation (in points) of other competitiveness constituents – CR hum, CRinf, CRfin, etc. According to scientific literature (Porter, 1990, 1998, 2000, 2008; Hakanson, 2004; Christensen et al, 2002), clusters enable companies to access qualified labour force or specialized resources. They also create the needed preconditions to gather and concentrate financial resources of various companies to carry out joint marketing projects. It must be noted that clusterized regions also form the base for the development of information networks that enable to communicate know-how and formal (informal) information among the cluster companies. Therefore, the estimations of the competitiveness constituents would vary in clusterized and non-clusterized regions. To summarize, the formula (1) suggested by Popa and Pater (2004) could be modified and adjusted to measure the influence of clusters if some of the competitiveness constituents were evaluated before joining a cluster and after joining it (on annual, etc. basis).

Competitiveness analysis level	**System level**			**Economy level**			**Environment level**	
	Supra- system	System	Sub-system	Macro	Mezzo	Micro	Inner	Outer

Competitiveness life cycle	Ephemeral (short-term)	Temporary (moderate-term)	Continuous (Long-term)

Components of general competitiveness	**General competitiveness**				
	Global competitiveness (position in global markets)		Economic competitiveness (efficiency of resource usage)		
	Systematic	**Partial**	**Systematic**	**Partial**	
	General results in all environments	Partial results in some environments	General results	Operation costs	Productivity

Competitiveness evaluation method	Qualitative	Quantitative	Relative (comparison with chosen standard)

Competitiveness hierarchy	Global	Continental	National	Regional (local)	Cluster-level	Company-level	Business unit/ activity level

Figure 1. Competitiveness evaluation levels and criteria
Source: the authors, 2010

Popa and Pater (2006) suggest that competitiveness of objects (countries, clusters, companies, business units, etc.) that belong to different hierarchy levels might be evaluated according to their dependence to a system (supra, sub). For instance, company competitiveness can be estimated in the context of global, continental, national, regional, local, and cluster economy (see Figure 1).

Event though competitiveness is rather often evaluated with the help of quantitative methods, it is possible to apply qualitative and relative methods.

The main advantages of this evaluation model:

- Evaluation model introduces clusters as an element of competitiveness (level of competitiveness hierarchy).
- Competitiveness evaluation is treated as a complex and multi-stage process.
- Competitiveness evaluation takes into account various relevant evaluation elements, including: analysis level, evaluation methods, hierarchy, life cycle, etc.

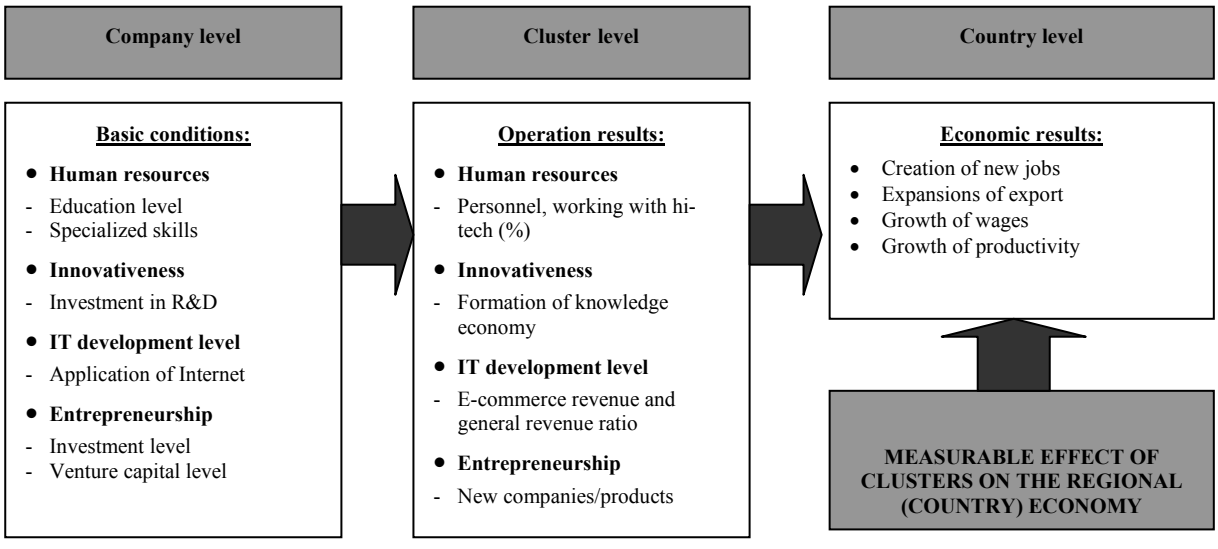


Figure 2. Competitiveness evaluation levels and criteria
Source: the authors, 2010

The main disadvantages of this evaluation model:

- Evaluation model is chaotic: separate competitiveness elements are not connected to one another or integrated in the system of evaluation.
- The authors do not offer definite, systematic, and clear competitiveness evaluation guidelines for each object.

The evaluation model identifies clusters as a hierarchy level rather than competitiveness determinant. Therefore, it might only serve as guidelines for creation of an integrative competitiveness evaluation method.

Cluster influence on the competitiveness of companies (economy sectors, etc.) might be evaluated separately from the influence of other competitiveness determinants. Andersen (2006) carried out important researches in this field that are identified in Figure 2. In order to estimate the contribution of clusters, it is relevant to evaluate the competitiveness of companies before and after joining a cluster. Basic primary conditions that must be taken into consideration are: human resources (quality and accessibility), investment in hi-tech, application of Internet and IT solutions in daily operations, current innovation, venture capital level, entrepreneurship and education level, etc.

The main advantages of this evaluation model:

- Evaluation model is designed to measure the influence of clusters on the competitiveness of companies, etc.
- The author sets definite and clear evaluation criteria to measure the contribution of clusters: human resources, innovativeness, entrepreneurship and IT usage level.

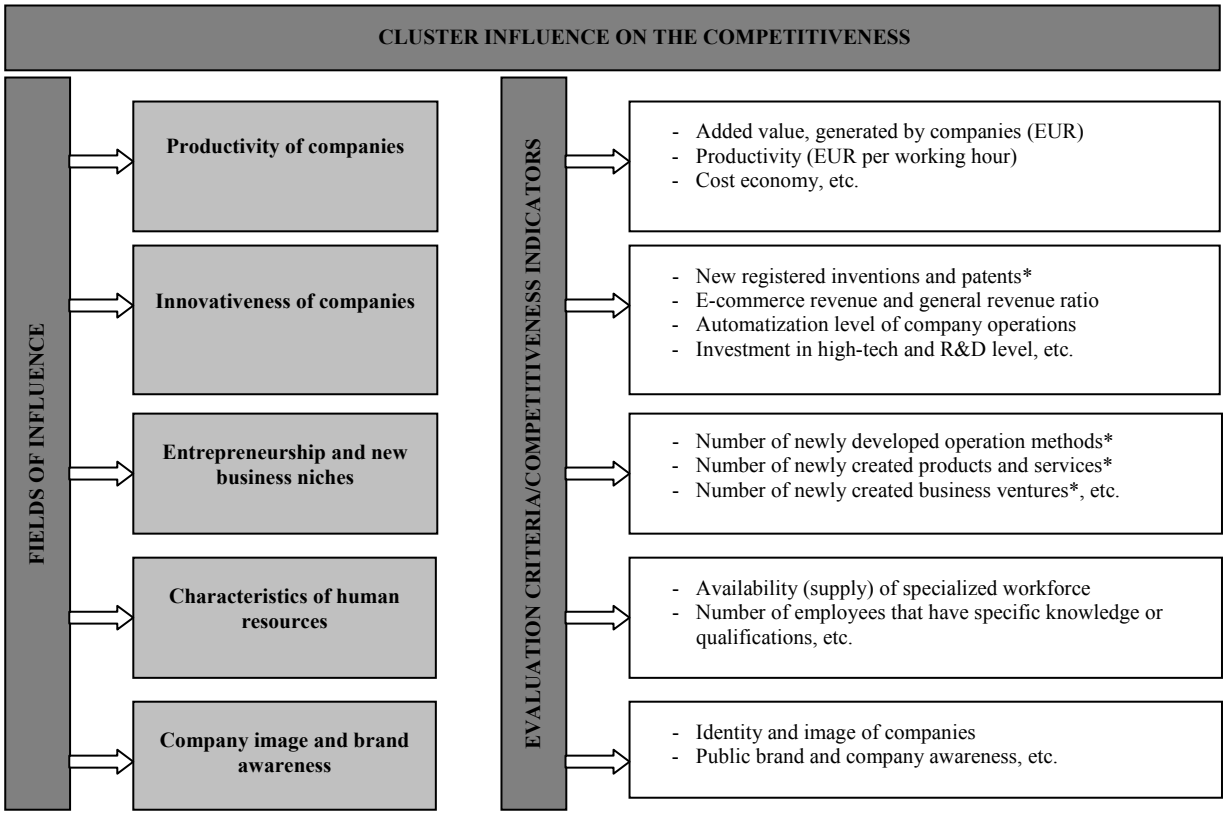
The main disadvantages of this evaluation model:

- Limited number of competitiveness evaluation criteria.
- Different evaluation criteria used for the evaluation of competitiveness before and after joining a cluster.
- Precondition that economic results and competitiveness of a country (region) might improve because of a total effect of competitiveness factors is ignored.

The model suggested by Andersen (2006) embraces a number of relevant aspects that are characteristic of cluster influence, thus it can serve as the basis for the formation of an integrative competitive evaluation model.

Integration of Contribution of Clusters into the Competitiveness Evaluation Model

Various authors (Porter, 1990, 1998, 2008; Strandskov, 2006; Andersen, 2006; Christensen, 2002; Hakanson, 2004 et al) emphasize that the main fields of cluster influence on the competitiveness of companies (regions, countries, etc.) are: productivity, innovativeness, creation of new business ventures. The aforementioned criteria have been chosen as the cornerstone of the evaluation model (see Figure 3).



**Number per chosen period*

Figure 3. Principal evaluation model of cluster contribution to the competitiveness of companies (economy sectors)

The model integrates three additional factors: company image, brand awareness and human resources (Figure 3). It must be noted that the first four factors (cluster influence of productivity, innovativeness, entrepreneurship and creation of new businesses, characteristics of human resources) are quantitative, that is quantitative characteristics, such as the

number of new goods (services), are to be compared before and after joining a cluster. The last two determinants (brand awareness and company image) are qualitative; therefore 2 alternative methods of evaluation might be applied: surveys (polls) and expert evaluation.

Moreover, while it is important to compare the results before and after joining a cluster, it is also recommended to compare the economic results of cluster companies with the average economic sector indicators, such as added value or innovation application level, etc. (Zvirblis, 2007).

It can be deduced that the contribution of clusters may be vital to gain and maintain competitiveness; therefore the influence of clusters must be evaluated. That would enable companies to make a logical and reasonable decision about joining a cluster or inducing the formation of a new cluster. However, it must be noted that the influence of clusters can not be separated from the contribution of other factors (see the criticism of the model suggested by Andersen, 2006).

Competitiveness function may be expressed as shown below (2):

Competitiveness = f (CF1, CF2, CF3, CF4..., CFn) (2), where CFn – competitiveness factor, n = [1;k]

According to the function, which is provided above, it must be noted that competitiveness is a dependant variable and its value is determined by the combination of different competitiveness factors (CF1-CFn). Competitiveness may be expressed through competitiveness indicators (CI-CIg), such as GDP per capita, the level of AVAT usage, number of newly created products and services (see Figure 3), etc.

In other words, competitiveness factors (determinants) directly influence the values of competitiveness indicators. It is the general basis for the formation of competitiveness evaluation model that integrates the influence of clusters.

The factor CF1signifies clusters in Figure 4; CF2-CFn stand for other possible competitiveness determinants, like low labor cost, well-developed access to natural resources, etc.

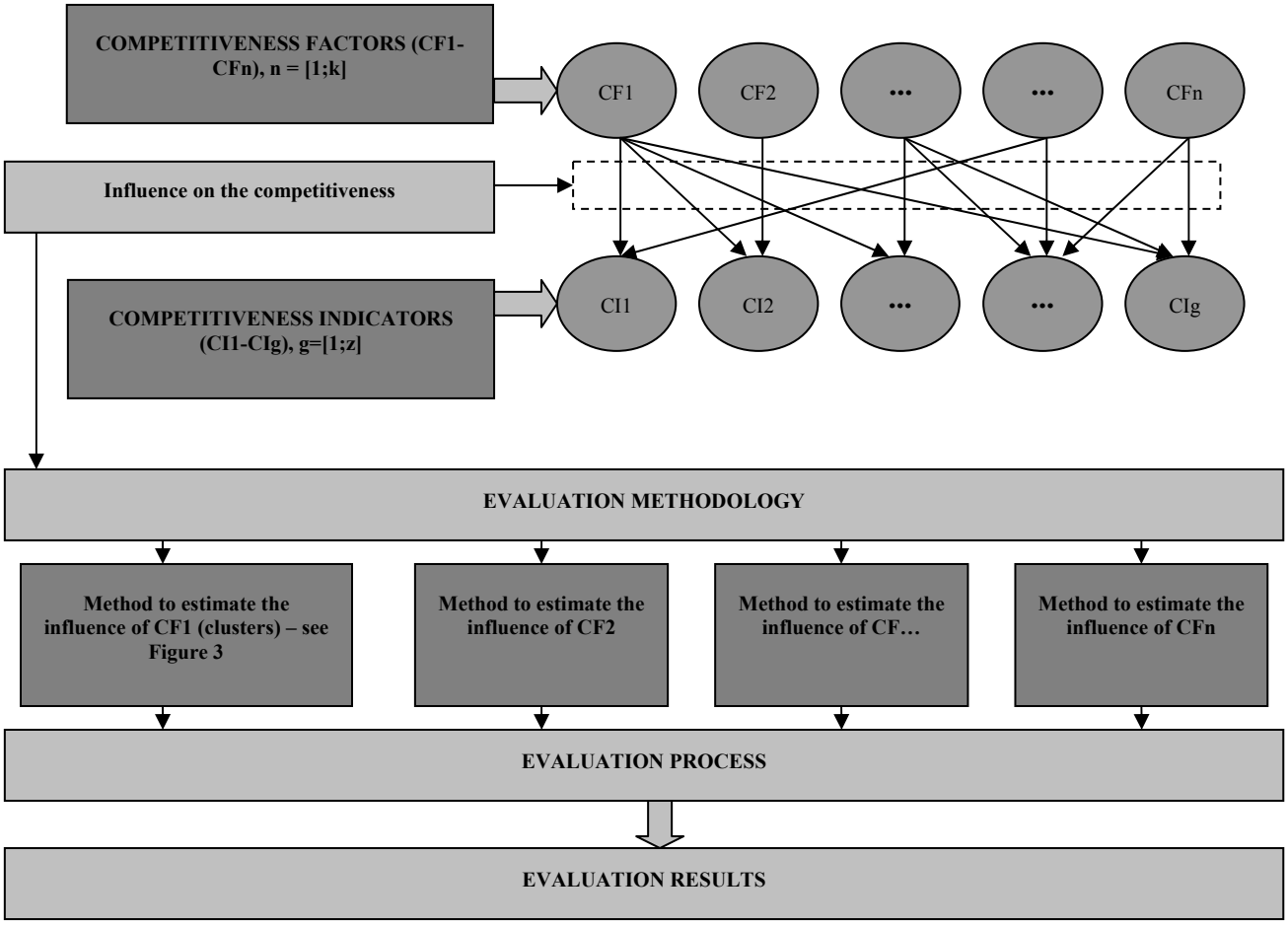


Figure 4. Competitiveness evaluation model that integrates the influence of clusters

Clusters (CF1 in the model, see Figure 4) contribute to the values of competitiveness indicators CI1-CIg. Between CI2 and CIg, there are g-3 indicators that are influenced by CF1 (empty bubbles in Figure 4). In addition, other factors at the same time contribute to the values of indicators CI1-CIg, thus the influence of clusters must be treated as part of synergy effect.

In conclusion, the evaluation of cluster contribution to the competitiveness of companies and economy sectors is a complex multi-layer process that should embrace a number

of criteria, quantitative/qualitative methods; and must take into account the contribution (impact) of other determinants of competitiveness.

Conclusions

1. The contribution of clusters on the competitiveness of business sectors and companies possesses at least three dimensions: productivity, innovation, entrepreneurship (creation of new business ventures). Clusters also make good incubators of innovative ideas or new companies. Moreover, clusters provide the basis for joint activities and operations, especially in the field of R&D, product development, information exchange, and marketing. It is generally recognized that cluster companies are more inclined to invest in qualitative development since they are able to accumulate extra funds with their partners – other organizations in a cluster.
2. Most competitiveness evaluation models either ignore the contribution of clusters or analyze them separately from other competitiveness factors. This approach is to be considered wrong for competitiveness determinants altogether generate the effect of synergy. It means that each competitiveness indicator is influenced by a large number of competitiveness determinants, or factors. A combination of various competitiveness factors usually manifests an increased impact and greater influence on the competitiveness of companies and business sectors, when compared with the influence of single factors.
3. The evaluation model suggested by the authors of this research treats clusters as an integrative part of various competitiveness factors. The impact of clusters can be measured with the help of quantitative methods; only a couple of qualitative methods (polls, expert evaluation) are recommended for the evaluation of specific criteria – company/brand awareness, company image. Clusters have to be treated as part of competitiveness evaluation model that includes n competitiveness determinants, or factors (CF1-CFn), and k competitiveness indicators – CI1-CIk. For example, clusters (CF1) contribute to the productivity of companies or sectors (CI1) that may be expressed as the added value (EUR) created per hour or innovativeness of companies or sectors (CI2) that may be expressed as new registered inventions, patents, etc. per a chosen period of time.

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Asta Malakauskaitė, Valentinas Navickas

Klasterių indėlis į įmonių konkurencingumą: raiška ir vertinimas

Santrauka

Šiame straipsnyje analizuojamas klasterių indėlis į įmonių (sektorių, regionų ir kt.) konkurencingumą, jo raiška ir vertinimo galimybės. Tyrimo tikslas – nustatyti klasterių įtakos konkurencingumui formas ir vertinimo metodus. Tikslui pasiekti suformuluoti šie tyrimo uždaviniai: 1) atlikti konkurencingumo vertinimo sampratos analizę; 2) ištirti ir palyginti įvairius konkurencingumo vertinimo modelius; 3) suformuoti vertinimo modelį, kuris pateiktų klasterių indėlį į konkurencingumą. Pagrindiniai tyrime taikyti metodai: loginė ir lyginamoji literatūros analizė, sintezė, dedukcija, grafiniai metodai, holistinis (sisteminis) požiūris. Konkurencingumas išreiškia reliatyvią (santykinę) įmonės, ūkio šakos, regiono, šalies ar šalių grupės (ekonominę, socialinę, technologinę ir kt.) poziciją kitų įmonių, ūkio šakų, regionų, šalių ir jų grupių atžvilgiu. Konkurencingumas pirmiausia yra laikytinas sudėtinga ekonomine kategorija, turinčia mažiausiai tris lygmenis: makro- lygmenį (šalies ekonomika), mezo- lygmenį (regiono, ūkio šakos ekonomika) ir mikro- lygmenį (įmonės ekonomika). Kiekvienas iš minėtų lygmenų pasižymi savo specifika ir atitinkamais unikaliais rodikliais, kurie naudojami konkurencingumo vertinimo procese. Konkurencingumo vertinimas ekonomiškai reikšmingas dėl kelių priežasčių: pirma, tai yra procesas, įgalinantis nustatyti analizuojamos šalies ekonomikos pranašumus ir trūkumus, siekiant subalansuotos ir darnios ekonomikos plėtros; antra, konkurencingumo vertinimas sudaro prielaidas kurti efektyvias ekonomikos dalyvių stimuliavimo priemones, kadangi identifikuoja jų prekių, paslaugų ir veiklų specifikos formuojamus konkurencinius pranašumus ir įgalina prognozuoti jų gebėjimą (ar gebėjimo stoką) atlaikyti kitų ekonomikos dalyvių konkurencinį spaudimą. Vertinimas gali būti apibūdintas kaip sisteminis procesas, kurio metu yra nustatoma vertinamo objekto vertė, svarba, svoris, reikšmė, palyginti su pasirinktu standartu (etalonu) ir taikant apibrėžtus vertinimo kriterijus bei metodiką. Būtina pabrėžti, jog minėta apibrėžtis apima konkurencingumo vertinimo procesą, tačiau jis pasižymi ir savita specifika – vertinant konkurencingumą dažnai sudėtinga apibrėžti konkurencingumo etaloną, kadangi gebėjimas konkuruoti kaip teigiamo užsienio prekybos balanso, palankaus verslo klimato, augančio BVP vienam gyventojui, ir kitų makra veiksnių (šalies, regiono lygiu) bei vartotojui patrauklaus prekių (paslaugų) kainos ir kokybės santykio, aukštų kokybės ir inovatyvumo standartų, plataus produkcijos asortimento ir kitų mikroveiksnių (ūkio šakos, įmonės lygiu) išraiška, yra labai reliatyvus. Lanksčios, sistemiškos ir detalios konkurencingumo vertinimo metodikos sudarymas – įvairių mokslinių ir taikomųjų tyrimų objektas. Savo konkurencingumo vertinimo metodikas ir gaires yra pasiūliusios daugelis tarptautinių ekonomikos srities organizacijų ir asocijuotų institucijų. Konkurencingumo vertinimo procesas yra imlus laiko, finansų ir (dažnai) žmogiškiesiems ištekliams. Nuo metodikos išsamumo ir detalizavimo laipsnio tiesiogiai priklauso ne tik vertinimo rezultatų tikslumas, vertingumas, bet ir vertinimo proceso sudėtingumas, metodikos pritaikymo sąnaudos bei tikslingumas. Pagrindinės teorinės, arba metodologinės, problemos, kylančios konkurencingumo vertinimo procese: trūksta vieningos, aiškios konkurencingumo sampratos, apribojimai, sąlygojami vertinimo metodikų. Praktiniame lygyje susiduriama su laiko ir finansinių išteklių stoka bei informacijos prieinamumo sąlygojamais apribojimais. Pabrėžtina, kad, įvairiems tarporganizaciniams verslo junginiams (tarp jų ir klasteriams) laipsniškai tampant integratyvia, neatsiejama konkurencingos ir dinamiškos žinių ekonomikos dalimi, jų vaidmuo konkurencingumo vertinimo procese neturėtų būti ignoruojamas. Todėl šiame straipsnyje siekiama suformuoti vieningą principinį įmonių (ekonomikos sektorių arba ūkio šakų) konkurencingumo vertinimo modelį, integruojantį klasterių konkurencinį poveikį. Klasteriai didina įmonių konkurencingumą, skatindami, kad didėtų jų produktyvumas ir inovatyvumas, augimą, atsirastų nauji verslai. Tai vyksta dėl daugelio priežasčių. Pvz., darbuotojai, priklausantys klasterio įmonėms, turi didesnę galimybę identifikuoti laisvas gamybos arba paslaugų sektoriaus nišas ir įkurti savo verslą. Nors prie šio tarporganizacinio darinio dažniausiai prisijungia vietinės įmonės, mažos patekimo į klasterį kliūtys gana greitai pritraukia ir kituose regionuose įsikūrusius verslininkus, kurie tikisi padidinti ekonominę vertę arba produktyvumą, įgyvendindami naujas idėjas ir panaudodami įgytus įgūdžius. Teritoriškai nutolę verslo subjektai (tiek nacionaliniai, tiek užsienio) taip pat siekia įkurti savo filialus arba antrines įmones klasterių veikimo regione. Nesėkmingo verslo rizika yra gerokai mažesnė, jeigu klasteryje jau dalyvauja užsienio įmonės. Klasteriai suteikia galimybę besikuriančioms įmonėms veiklos pradžioje naudotis egzistuojančių įmonių technologijomis ir sudaro sąlygas keistis inovatyviomis žiniomis. Naujai susikūrusios įmonės gali sėkmingai naudotis klasterio tiekėjų paslaugomis, lengviau randa reikiamos kvalifikacijos specialistų ir materialinių išteklių. Vietinės finansų institucijos bei investuotojai gerai žino klasterio veiklos specifiką, todėl gana dažnai palankesnėmis sąlygomis finansuoja naujų įmonių veiklą. Klasteriams būdinga užimti didelę vietinės rinkos dalį, todėl verslininkai tiesiogiai gali turėti naudos iš pastovių santykių ir ryšių, kurie egzistuoja tarp klasterio įmonių. Visa tai mažina riziką, taip pat tikimybę, kad naujos įmonės veikla bus nesėkminga. Klasteriai ne tik sukuria sąlygas diegti inovacijas, bet ir įgalina įmones tai daryti operatyviai. Didelę įtaką tam turi glaudus tiekėjo ir vartotojo ryšys. Klasteryje veikiantys partneriai gali būti ir dažniausiai yra įtraukiami į inovacinį procesą. Tai užtikrina, kad klientų poreikiai bus geriau patenkinti. Klasterio įmonės turi sąlygas eksperimentuoti ir neprisiimti didelių įsipareigojimų, kol nėra pakankamai tikros, kad inovacinis projektas bus

sėkmingas. Klasteriui nepriklausantys verslo subjektai, kurie yra geografiškai nutolę nuo savo tiekėjų, sudėtingiau sprendžia kontraktų sudarymo, veiklos koordinavimo, techninės priežiūros ir kitas problemas. Klasteriai gerina priėjimą prie kvalifikuotos darbo jėgos ar kitų specializuotų išteklių, sukuria prielaidas koncentruoti įmonių - narių finansinius išteklius bendriesiems projektams, jungtinės rinkodaros veikloms įgyvendinti, be to, klasterizuotuose regionuose formuojasi informaciniai tinklai, kuriais sklinda visa įmonėms aktuali tiek formalaus, tiek neformalaus pobūdžio informacija, specializuotos žinios. Taigi šių konkurencingumo komponentų reikšmės klasterizuotose bei neklasterizuotose vietovėse yra skirtingos. Klasterių įtaka įmonių (ekonomikos sektorių) konkurencingumui bendrąja prasme gali būti vertinama atskirai nuo kitų konkurencingumo veiksnių poveikio. Siekiant įvertinti klasterių konkurencinę įtaką, analizuojamas atskirų įmonių konkurencingumas prieš įsitraukiant į klasterį, t. y. pradinės konkurencinės sąlygos: esamas inovacijų lygis, žmogiškųjų išteklių kokybė ir prieinamumas, įmonių antrepreneriškumas, investicijos į aukštas ir vidutiniškai aukštas technologijas (AVAT), informacinių technologijų (IT) taikymas, įgyvendinant įprastines verslo operacijas, rizikos kapitalo lygis ir kt. Įvertinus pradines konkurencines sąlygas analizuojami veiklos rezultatai įsitraukus į klasterį ar susiformavus naujam klasteriui. Iš jų minėtini: žinių ekonomikos išsivystymo lygis, klasterio įmonių darbuotojų, dirbančių su AVAT, dalis, naujų produktų kūrimas ir įmonių steigimas, elektroninės komercijos paplitimas, arba pardavimų internete dalis. Pradinių bei pakitusių konkurencinių sąlygų vertinimas įgalina atskleisti klasterių poveikį visos šalies ekonomikai: kuriamos naujos darbo vietos kūrimu, didėja darbo našumas ir atlyginimai, didėja eksporto apimtys. Siekiant nustatyti klasterio įtaką jį sudarančių įmonių konkurencingumui, būtina ne vien tik palyginti jų veiklos rezultatus prieš įsitraukiant į klasterį ir jau įsitraukus, bet ir atlikti klasterio įmonių ir vidutinių atitinkamos ūkio šakos rodiklių (pvz., generuojamos pridėtinės vertės, inovacijų diegimo lygio) lyginamąją analizę. Klasterių, kaip įmonių konkurencingumą padedančių suformuoti bei išlaikyti tarporganizacinių junginių, įtakos vertinimas įgalintų įmonę priimti pagrįstą ir motyvuotą sprendimą dėl įsitraukimo į veikiantį klasterį ar naujo klasterio formavimo. Tačiau būtina pažymėti, jog klasterio įtaka negali būti atsieta nuo kitų konkurencingumo veiksnių poveikio. Straipsnyje analizuojami Popa ir Paterio (2004, 2006) bei Anderseno (2006) konkurencingumo modeliai. Popa ir Paterio modeliuose į klasterių poveikį konkurencingumui apskritai nėra atsižvelgiama arba jie traktuojami kaip analizės lygmuo, o ne konkurencingumo įtakos veiksnys (determinantas). Anderseno (2006) modelyje klasterių įtaka atsiejama nuo kitų konkurencingumo įtakos veiksnių poveikio. Šio mokslinio tyrimo autoriai vadovaujasi holistiniu (sisteminiu) požiūriu ir teigia, jog klasterių įtaka negali būti vertinama atskirai – įmonių ir sektorių konkurencingumą sąlygoja kompleksinis determinantų poveikis arba konkurencingumo veiksnių sinergija. Vienu metu kiekvienas konkurencingumo veiksnys daro poveikį kelių ar net keliolikos konkurencingumo rodiklių reikšmėms, pvz., didina įmonių produktyvumą, išreiškiamą sektoriuje sukuriamos pridėtinės vertės apimtimi (pasirinkta valiuta) per nustatytą laiko vienetą, ir kartu skatina įmonių ir sektorių inovacinę veiklą, matuojamą įregistruotų naujų išradimų ir patentų skaičiumi (procentiniu pokyčiu) per nustatytą laiko vienetą ar kitais pasirinktais rodikliais. Apibendrinant galima teigti, jog klasterių įtakos konkurencingumui vertinimas yra itin sudėtingas procesas, į kurį privalo būti įtraukti tiek kiekybiniais, tiek kokybiniais būdais išmatuojami kriterijai, iš kurių minėtini įtaka įmonių produktyvumui, inovatyvumui ir naujų įmonių kūrimui. Klasteriai taip pat daro poveikį žmogiškųjų išteklių kokybei, įmonių įvaizdžiui ir žinomumui visuomenėje.

Raktažodžiai: *klasteriai, konkurencingumas, konkurencingumo vertinimas, konkurencingumo vertinimo modeliai.*

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