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Production Outsourcing in the International Market

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The article is organized in four parts. First part is introduction. In this part the aim of this work, the research problem and objectives are formulated. The aim of this work is as follows: to use the methods of simulation, to examine the outsourcing, to show theoretical and practical aspects of the selected thesis, which have not only methodological, but the applicable value as well. The objectives of this work are: 1) to examine and to introduce the impact of the costs of transportation to outsourcing in the international trade, as well as to study the question of applicability and practice nationally and internationally; 2) to review and to introduce to the calculation of the impact of transportation costs of intermediate goods and the practical use as well;

In the second part of this article relationship of outsourcing and international trade in contemporary economy is analyzed and research hypotheses are formulated.

In the third part of this article production outsourcing in the autarky is analyzed.

In the fourth part of this article outsourcing in the international market like the results of study are analyzed. The problem solved in this paper is as follows: the existence of international outsourcing depends on 3 factors: (a) fragmentation and benefits of outsourcing; (b) transportation costs; (c) distance between the input producer and final product producer. As bigger is the advantage of costs and lower are the costs of transportation the outsourcing becomes more attractive in the case of free trade equilibrium.

After the execution of the analysis of costs of delivery of input from input producer to the final product producer, it is essential to consider, where the production of final product is developed. This information becomes very important making the decisions of investments.

Keywords: *outsourcing, production outsourcing, input producers, international market.*

Introduction

We live in the age of outsourcing. Firms seem to be subcontracting an ever expanding set of activities, ranging from product design to assembly, from research and development to marketing, distribution, and after-sales service. Some firms have gone so far as to become "virtual" manufacturers, owning designs for many products but making almost nothing themselves.

During integration and globalisation process, businessmen are more actively expanding the activities in other countries, starting with international trading and ending with international companies. Vertical disintegration is especially evident in international trade. Companies are looking for partners in some more technologically and politically developed countries or they are looking for low wages in poor economy countries. High vertical fragmentation is typical for modern industrial production. It is evident that there exists not only vertical fragmentation, because internationally the fragmentation of production is increasing, and it is reflected in trade growth of intermediate goods.

The research problem. At the moment scientists are actively analysing the trade of intermediate goods and authorized components termed as "vertical specialization" or "global production sharing". This economic process has been formed because of rapid expansion in international specialization for a varied group of industries. It seems safe to tentatively conclude that the outsourcing of intermediate goods and business services is one of the most rapidly growing components of international trade.

The aim of this work. The purpose is to examine and introduce the impact of the costs of transportation to outsourcing in the international trade, the question of applicability and the practise nationally and internationally.

The objectives of this work are: 1) We can show theoretical and practical aspects of the selected thesis, which have not only methodological, but the applicable value as well. 2) To review and to introduce to the calculation of the impact of transportation costs of intermediate goods and the practical use as well. 3) Using the methods of simulation we can examine the outsourcing.

The research object is the impact of outsourcing in the international market.

Research methods used: The comparison analysis of literature, methods of simulation, statistical analysis.

The relation of outsourcing and international trade in a lateral-day economy.

A very high vertical fragmentation is typical for the modern production. Grossman and Helpman (2002) emphasize that each decreasing activity extent is guaranteed in different boundaries.

It is evident, that not only the vertical fragmentation exists, but the fragmentation of production is also increasing internationally, and is reflected in growth of intermediate product trade. International economics literature identifies a key role for both national (Burda and Dluhosch, 2002) and international outsourcing in the recent wave of globalization, therefore a very large role is played not only by the national (Burda 2002), but also by

the international outsourcing as well. In order to understand the company's decision to use international outsourcing, that is to say the factors which determine the trade of intermediate goods, it is very important to exam the relations between the costs of transportation and the costs of services. However, the trading models usually ignore the barriers of trade contracting nationally (local transportation costs). Behrens (2003) considers that it is a very important difficulty and one of the most distinctive features, when international trading theory is compared to local trading theory. Ohlin (1968) emphasizes that the transportation of products locally and internationally is conditioned by economic activity localization, the geography of demand and the manner of trading. (Hendry, 1995). Consequently, geographical distance is concerned with inescapable cost of local transportation. Therefore, the searching analysis of national and international transportation costs in the world, where technologically the outsourcing is possible, is very important. For such analysis we will represent the model, which explains the dimensions of space between countries.

In this part we will introduce fragmentation and outsourcing into a linear model à la Hotelling. This allows us to identify compatibility and to explore its impact on the final goods trade pattern and the welfare effects of trade liberalization in a world with two asymmetrically sized economies. Such compatibility is conditioned by these two effects.

On the one hand, a larger population size leads to a higher degree of vertical specialization and, under autarky, to more intensive national outsourcing. This is a labour division effect, which was first mentioned in Adam Smith's "Wealth of Nations". It implies lower variable production costs in the case of outsourcing and, thus, an advantage of a (population-wise) large economy. On the other hand, empirical evidence shows that "on average firms facing larger markets are larger" (Kumar et al., 1999). Hence, if a population-rich economy is also geographically large, we can on average expect large geographical distances between producers and consumers of final output under autarky. This gives rise to a transport-cost related disadvantage of a (geographically) large economy.

The analysis starts with discussion about the layer effects of international openness market. As McLaren (2000), we can show, that disappearing trading barriers influences the structure of production that it is to say, companies are using integrated production method or the production based on outsourcing.

Any way, the achieved results clearly show, that outsourcing can determine the devastating business liberalization effects, which are concerned with high level vertical fragmentation of production of a final product. It is a new notice, which is opposite to the McLaren "law" to increase the outsourcing and should be particularly actual for the analysis of empirical trade liberalization effect.

To analyze this trade-off, we proceed in the following way. First, we set up a partial equilibrium model à la Hotelling with one final goods producer located at the centre of a linear economy.

The contribution of this study is to allow two different production technologies in a spatial model of trade. First, according Shachmurove and Spiegel (1995) and Tharakan and Thisse (2002), there is an integrated production mode, where the whole production process takes place in-house. Second, the final goods producer may fragment the production process and engage in outsourcing by purchasing intermediate inputs from an external supplier at arm's length.

There is a sequence of five decisions that determines the autarky equilibrium.

See Figure 1 for a summary of these decisions.

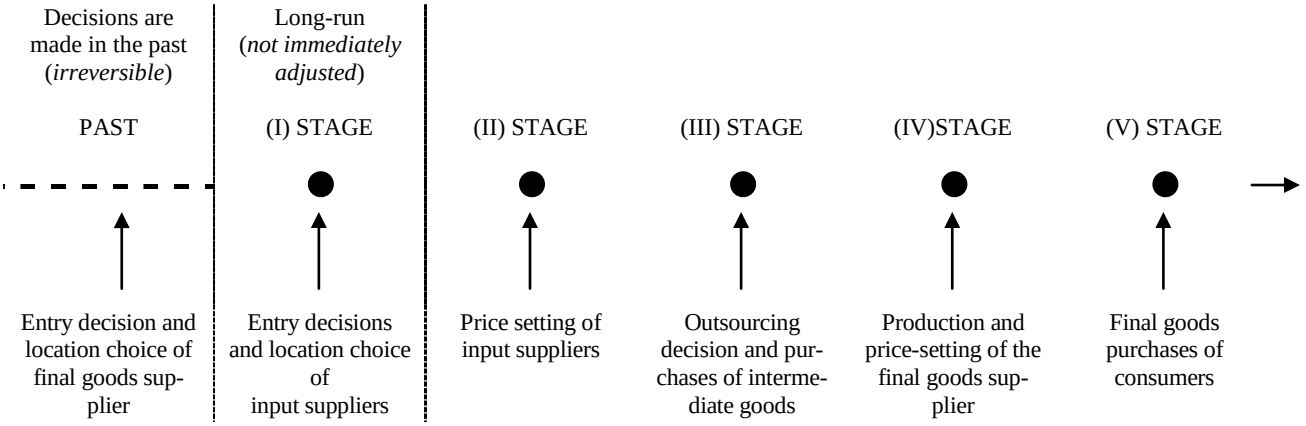

Figure 1. The sequence of decisions

As it was represented in the model, trade liberalization may lead to international outsourcing and, thus, to a change in the small economy's mode of final goods production. In the long-run, when entry/exit and location decisions of input producers are endogenous, there may be entry of a further input producer and national outsourcing in both economies. This result coincides with findings by McLaren who emphasizes that market thickness effects lead to leaner and less integrated firms, when countries lower their trade barriers.

However, as it was made clear, competition effects may also make the single input producer attractive, and the integrated production in both economies is the outcome under free trade. This is associated with a negative efficiency effect, because the superior outsourcing technology is replaced. The possibility of such a devastating outcome is a new insight and of particular relevance, when measuring the gains of trade empirically.

In view of the analysis above, there is no clear-cut prediction regarding the long-run welfare effects of trade liber-

alization. If competition leads to an exit of the single input producer and, therefore, implies integrated production in both economies or if a second input producer enters the integrated market in the long-run, the outsourcing-related production cost advantage of the large economy vanishes.

The long-run effects of trade liberalization point to the relevance of outsourcing opportunities for welfare gains. Only if there is an outsourcing-related production cost advantage in the large economy, both small and large countries can simultaneously gain from trade liberalization without measures of cross-country redistribution. As a consequence, one may hypothesize that improved outsourcing opportunities from the 70s onwards play a key role in explaining the wave of trade liberalization observed in that period. And with regard to the economic success of the EU, the theoretical insights in this subsection suggest that better outsourcing opportunities for European firms can explain the pace of the European integration process.

In outsourcing of professional services, the set of relevant stakeholders involves include parties from both developed and developing nations. Now, companies in developing nations themselves are beginning to outsource to other markets to spread their labour costs.

The table below summarizes the key stakeholders.

Table

Outsourcing Nations and Host Nations comparison

Outsourcing Nations	Host Nations
Professional service workers losing jobs	Professional service workers being hired
Firms hiring foreign labour	Firms providing outsourcing service
Legislators responsible for economy regulators	Policy makers responsible for economy
Government procurement	Citizens not being hired for professional services
Customers of professional services	

The relationships between these stakeholders are complex. Professional service workers who lose their jobs to outsourcing and legislators who are faced with the impacts on labour and economy must create a new economy reform program with the short-term impact.

No one is trying to challenge the economic benefit and no one is amazed, that in more and more activities the outsourcing is used. Paret law declares, 20% of pains determine 80% of result. R. Koch who expanded this theory, predicates that mostly 20% of activity brings the mainly profit to the company. Such new company, which acts only in well known sphere and transfers other works transfer other company, may be called a virtual company. Externally it looks as a full company, but internally it is empty, except the brain. Outsourcing educates the dilemma of a producer to produce or buy the inputs used in production. This is concerned with the questions of price reduction and quality.

Very often people are seeking, that more work could be done by suppliers; that can be called reverse disintegration. But it can be done by transferring a part of activity to customers as IKEA Company did. A typical internet bank let us pay our bills by ourselves that is direct disintegration. If we will look to the company as to the set "Lego" cubes, essentially for each part of organisation, it will be possible to consider itself the position in the process of creation of all organisation. Earlier it was a sum question – integration. Now the attention turns to subtraction actions – disintegration. (Bagdonas and others 2000).

Production outsourcing in the autarky

In the case of production outsourcing, company transfers a part or the whole cycle of production chain processes to some other company.

For example, it is possible to examine the general production and trade equilibrium model, in which one industry branch companies are outsourcing specific activities from other industry branch companies. Such companies are looking for partners, who technologically are ready to satisfy its needs. In this situation the possible solutions of companies unite three modern outsourcing strategy features, which are substantial according our assumption:

- Companies must find a partner, who lets perform some needed specific kind of activities.
- Those companies must convince the potential suppliers to produce products according to specific orders or their needs.
- Outsourcer must arouse the investment of some needed specific partnership at the environment of not finished contract.

The first subject of outsourcing distribution – the size of market. Companies outsourcers must be sure, that there is a real possibility to find a suitable partner with experience, who could enable the need of specific preparation of inputs or services to the needs of a final good producer. Second, the methodology of search impacts the costs and chance of finding a suitable partner. The search will cost lower and will be more successful in a market, where infrastructure of communication and services is well developed. Third, the technology for specific components impacts the wishes of partner to undertake the investment which is needed for the prototype.

In order to prove the substantial factors, which determinate the decision to outsource or to continue the integrated production, we will analyse the example of Lithuanian company cooperation with a Swedish company. For 15 years the company was pursuing 100% integrated production of typical final product stone crashing machine. For the first 5 years the company was producing 10 products per year. Because the product is technologically complicated, a lot of operations are needed for the production, which is made by high qualification workforce.

For the last years the demand of the market increased very much and the average need of final products "stone crashers" increased to 50 units per year. Because of this situation company had to increase the capacities and to expand the production. During the last year meeting of shareholders it the management of the company and shareholders decided to change the strategy of production. It was decided to increase the capacities of production, by developing the technological sectors, creating the largest surplus value of final product and the production

of metal structure of mechanism to outsource to some specialized metal processing company.

Therefore the main three tasks were pointed:

- to find some proper qualified partner;
- to coordinate the technology of production;
- to analyse all the economic factors, which are concerned with decreasing of costs of integrated production and maximization of profit of final product – "stone crasher".

In order to analyse the possibilities of production outsourcing of the input – metal structure, we will evaluate all the economic qualitative and quantitative factors, which can determine the decision of final producer.

The decision of final producer is determined by economic, technological and qualitative criteria. Economic criteria are the most important for final product producer. In this case final product producer must evaluate if it is worth to continue integrated production, or it is better to outsource some recourses from an input producer. Therefore the final producer must intend the marginal price, which can be paid to an input producer. This situation can be determined as follows:

$$c_i \sim \mathrm{A}_{\max}$$

The maximum price of input will be marked $\mathrm{A}_{\max}$, for which the final producer will buy the input still. c_i – the constant of marginal costs of integrated production (index *i*), where $A > c_i > 0$. In the case of outsourcing the final good producer uses one unit of input, which is bought from the input supplier (index *u*) to produce one unit of final product.

Input price, for which the input producer (index u) will be ready to produce for final good producer, will be marked c_u. Transportation costs, which appear during delivery of input to final good producer, is marked t.

The price which shall be paid to input producer, in case of purchasing the input is marked ρ and determined by equality:

$$\rho = c_u + t$$

At the moment Swedish company capacities let produce 35-40 units of final products "stone crashers" and metal structures which are needed for them. The production costs for one unit or marginal price, which can be paid by final producer to input producer is $c_i = 7500$ €/pcs.

In this case the company must find a suitable qualification supplier, which could meet 4 main criteria:

1. It should be able to produce suitable quality metal structures: 50 units per year with perspective to increase the capacities 10 each year.
2. It should be reliable, financial strong and profitable working company.
3. It should be able to produce metal structures, for a price $\mathrm{A}_{\max}$ = 7500,00 €/pcs. or for some more attractive price.
4. It should produce the metal structure for a price $\mathrm{A}_{\min}$ = 5250,00 €/pcs. or higher price, because the lower price could mean that the production of input will not be implemented according to the suitable technology (such situation can be proved with reference, that in the same competition market the costs of material are ~5250,00 €/pcs. (~65% – ~70% from final producer, which is in the same competition market).

In order to evaluate the situation in the market and to know the real possibilities of outsourcing, Swedish company has sent 25 inquiries, which could have an interest to produce this input. All potential input producers had got their commercial inquiries, in which the technical information was directed (product drawings and production technology) also the conditions of cooperation (production terms, quantities, transportation conditions and the terms of payment).

After the survey of the companies 18 quotations were obtained. The prices are represented in the second figure.

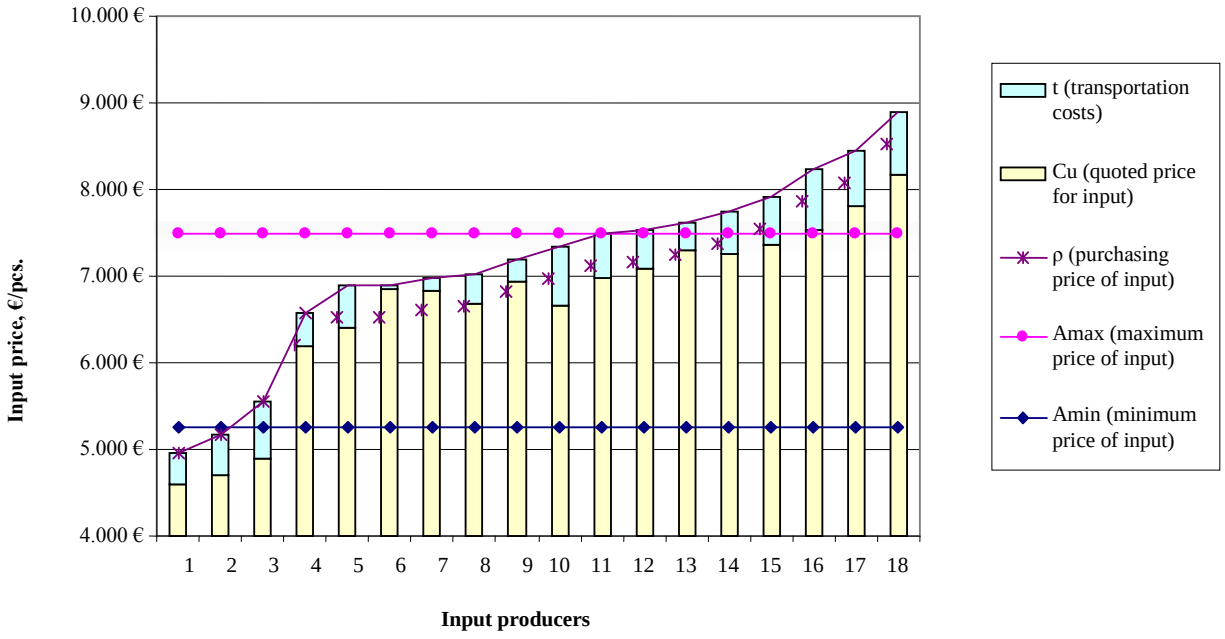

Figure 2. The possibility of outsourcing of input in autarky

For the purpose to better understand the decision of cooperation between final producer and input producer, the analysis of input producer must be performed, in order the final producer could act in the input market successfully or to develop the activity of production according to exclusive requirements.

To operate usefully in the market of inputs or to develop the production according exclusive orders, the input products producer must measure the costs of transportation, which run up during the delivery of inputs to the final producer.

First, in order to operate successfully in the market, input producer must sell his product profitably, getting the desirable profit margin. Only in this case the input producer will be able to perform and develop his activity in the market. The main condition of successful cooperation can be determined as follows:

$$A_{max} > c_u > A_{min}$$

In this equality the price of input will be marked – c_u, the profit of input producer – π and the costs of production – χ^*, and these rates will be determined as follows:

$$\pi > 0 \text{ and } \pi = c_u - \chi^*$$

In case of cooperation of input producer and final product producer, the costs of transportation must be measured as the constituent part of input production costs, because these costs *t* will influence the realization of input products in the market. This can be expressed by the formula:

$$\rho = \chi^* + t + \pi$$

Because all the input producers are located in the same competition market, the costs of production and the desirable profit margin are in the similar level. Let's say, that each producer expects to earn ~15% as a profit margin. Also we accept the assumption, that because of the same reason all these producers have very similar production costs.

After evaluating the level of competition the table was created, in which firstly the average market price of input was calculated. (c_u average. = 6900 €/pcs). If all these producers will earn the profit margin of ~15%, then average costs of input will be χ^* average = c_u average * 0,85. Consequently, the average costs of product will be

$$\chi^* = 6900 * 0{,}85.$$

With reference to a la Hotelling model, we accept the assumption, that the final product producer is located in the centre of the country. All potential suppliers are located in all the country. The largest distance (Sweden) runs til ~1500 km, therefore the final product producer can be far-off, about ~700 km. Because the market price of one kilometre of transport which is needed for transportation of the product runs up to 1,1 €/km, the transportation costs dependence on the location of input producer can be easily evaluated. The picture shows that as the input producer is located far the costs of transportation are lager and the price of input, which should be paid by final product producer is also larger. The illustration of the situation is imaged in Figure 3.

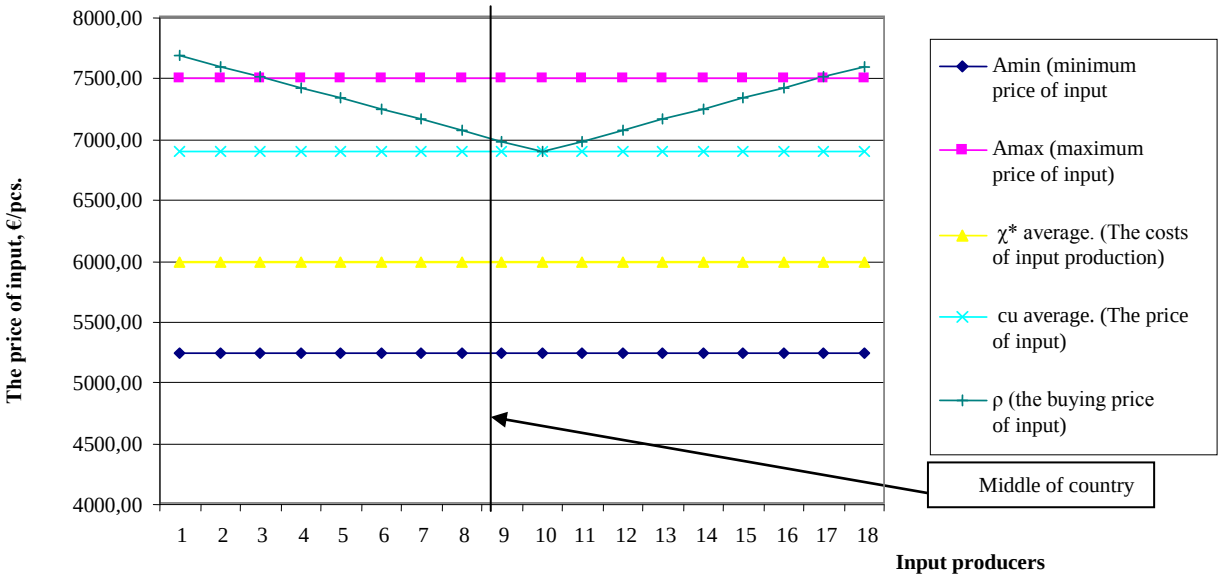

Figure 3. The analysis of input producers

The figure shows, that the closer is the input producer to final product producer the lower is the price of input. So we come to the conclusion that the most profitable thing for the input producer is to establish itself as close as possible to final product producer. In this way the largest margin of profit can by expected.

Outsourcing in the international market

As it was already mentioned, the first factor of outsourcing distribution is the size of the market. In this instance we will analyse the fundamental factors, which influence the decision of Sweden Company to outsource to abroad market. In this situation company outsourcer must be sure, that there is a real probability to find a partner, who will be technologically capable to produce the input and to quote some more attractive price than the potential input producers from the local market.

In order to prove all fundamental factors that determinate the decision of final product producer to outsource or to proceed the integrated production, we will analyze

the same Swedish company's typical final product – "stone crasher" production.

With the purpose to evaluate the situation in the aboard market Swedish Company send 15 inquiries to metal processing companies, that could be interested to produce the input. All the inquiries were sent to EU companies, which are in the zone of free trade. After inquiring 12 quotations were received, and the which prices can by seen in Figure 4.

After the analysis of quotations, Swedish Company saw, that there is a real possibility to outsource the production for a more attractive price than in the local market. Potential input suppliers (companies 3, 4, 5, 6, 7, 8) provided economically better quotations comparing with the integrated production model and the quotation of company no. 3 was even better local market prices. In this case it was clear that there is not only a real possibility to outsource, but also to lower the costs of production and to increase the profit margin.

Companies 9, 10, 11 and 12 quoted also economically attractive production price, but when the international transportation costs were added, large price was obtained, which exceed A_{max} = 7500 €. First two companies 1 and 2 quoted also a very attractive price but final product producer estimated the minimum price margin of input (it is possible that raw material is cheaper in foreign market for ~15%, and Baltic producers usually use Russian raw material). All other quotations which are cheaper than the minimum estimated margin price were refused, because of suspect quality and inadequacy of technology.

To compare the numbers and decision of Swedish company, where it is better to outsource, the numbers will be imagined in a diagram form.

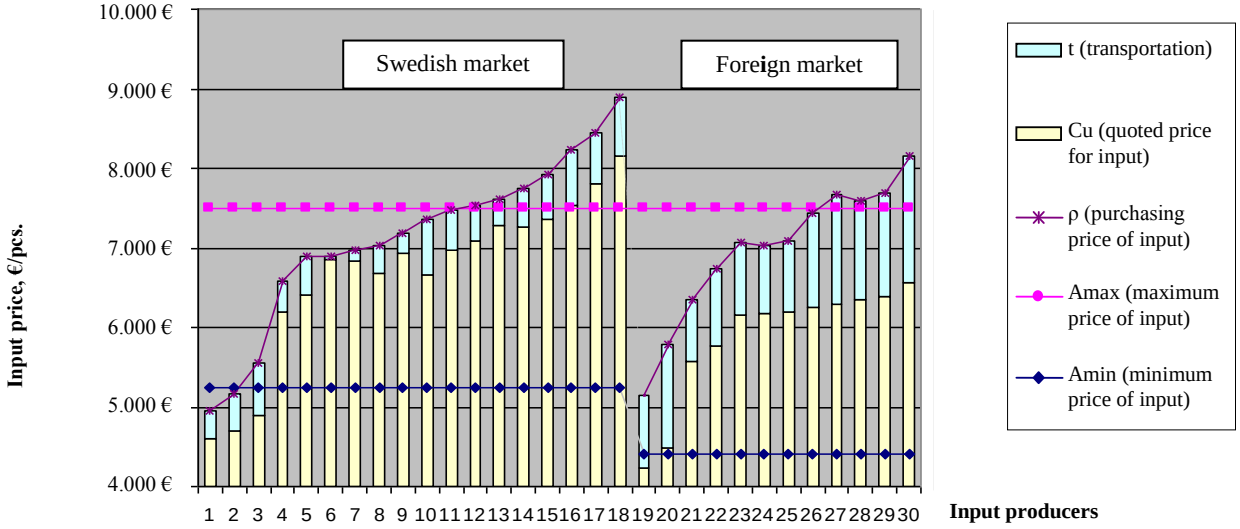

Figure 4. The comparison of the price of input producers in autarky and foreign market

In order to more properly understand the decision of cooperation between final product producer and input producer, the analysis of input producers in Swedish market and foreign market is to by conducted. In this case we will compare the costs of both countries input producers costs, product prices and transportation costs, which are needed for the delivery of input to the location of final product producer.

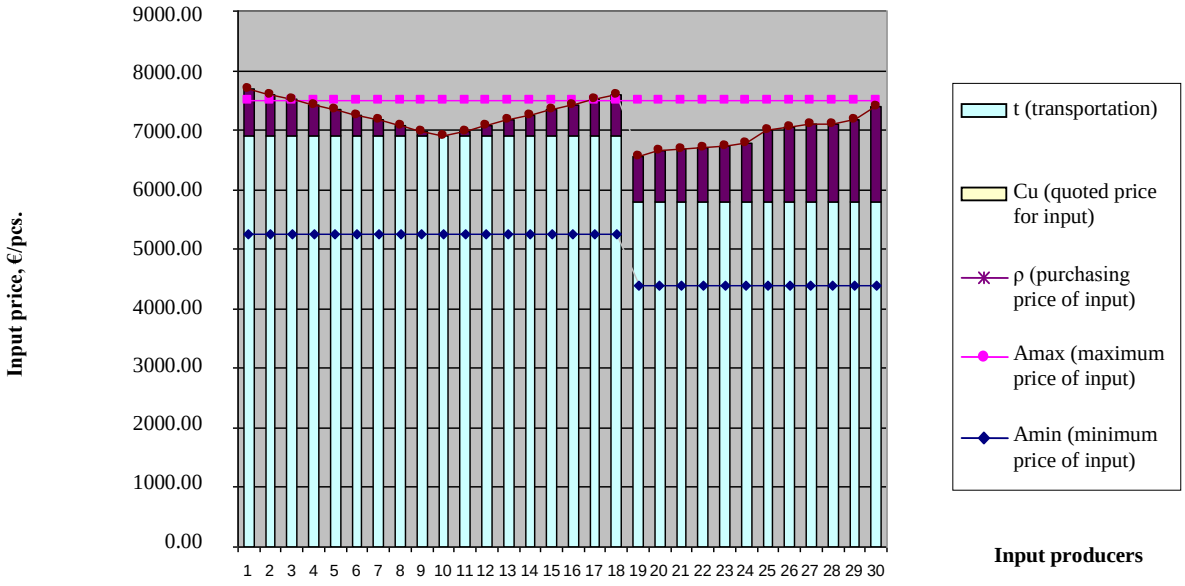

Figure 5. The comparison of part of transportation costs in the price of input

The rates will be indicated as follows. All foreign input producers are located not in Sweden, but in the same competition EU market. Their production costs and the desirable profit margin are in a very similar level. Let's say, that each producer expects the same ~15% profit margin as in the Swedish market. The assumption is accepted that being in the same market determines very similar production costs.

After evaluating the level of competition, firstly the average market price and average costs of input will be calculated. The lattes runs up during the production of input c_u average = 5800 €/pcs. and all of the will earn ~15% profit margin, so the average costs for one peace of input would be χ^* average = c_u average * 0,85. Consequently, the average market costs would be χ^* average = 5000 * 0,85.

In autarky the final product producer is located in the middle of the country and national input producers are distant equal. In the international market or communicating with other country the input producers will be much more distant than some other local input producer. So it is possible to determine that as further is the input producer located, the lower are his production costs, because in some other way his price will be to high and will exceed the margin price A_{max} of final product producer.

In order to better evaluate the influence of transportation costs to the price of input, the diagrams no. 6 and no. 7 will be represented. In one pair of diagrams input producer is represented as acting in the autarky and another in the international market. There are two diagrams in each pair and it is very easy to see the differences. In both diagrams of figure No. 6 autarky input producers costs are represented at minimum and maximum distance to final product producer location. In diagram which is on the right side transportation costs are 9% larger than the transportation costs of input producer that is in a minimum distant to final product producer, (the diagram on the left side).

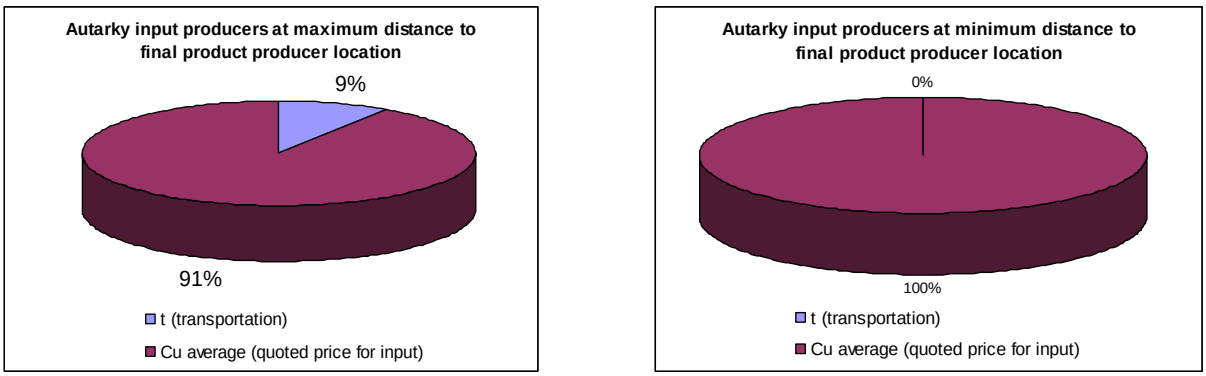

Figure 6. Structure of input price in the autarky

Much larger difference is possible to see evaluating the situation in the international market. There the costs are ranging from 12% to 22%.

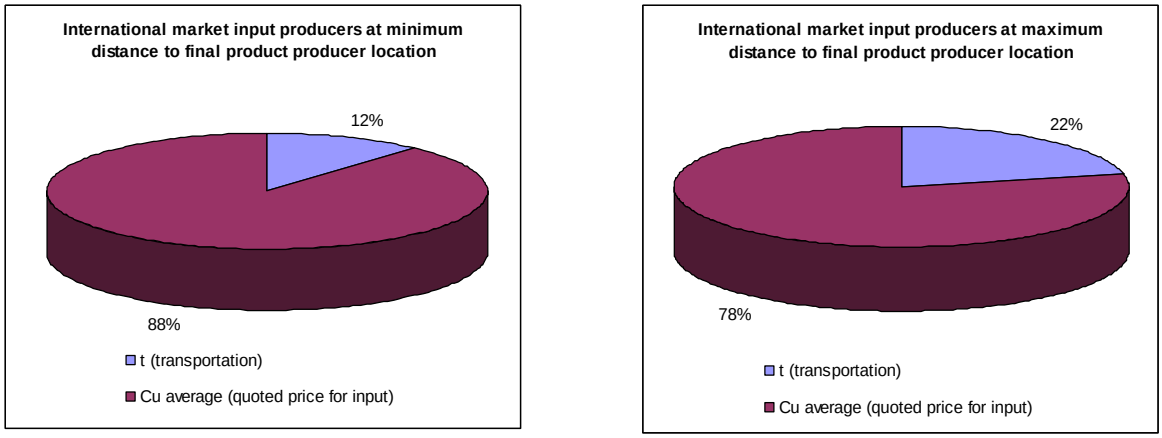

Figure 7. Structure of input price in the international market

The analysis made by simulation calculations showed, that in case of outsourcing it is very important to consider the distance between the input producer and the final product producer. Increasing distance determines the increase of comparative standing of transportation costs in the price of input. This inequality shall be paid by final product producer. Consequently, it will influence the decision to continue the integrated production or to specialize in the production, which crates the largest added value, by using beneficial costs of outsourcing.

Conclusions

- The accomplished theoretical analysis lets us understand, that outsourcing as the strategy of business has a possibility to exclude the importance of the branch competition. Company can choose the main critical areas, where the largest added value

of product is created and where there are unsubstantial services to outsource from suppliers. Such process, when most of organization processes are outsourced from outside is determined by economic expression – outsourcing.

- Outsourcing is more than buying raw material or inputs. It means the finding of suitable partner whom which it is possible to crate bilateral cooperation, and to understand the importance of investment into production of input. It is also important to find a partner who is capable to produce the inputs corresponding to the needs of final product producer.
- In many professional services the costs of activity start are lower and do not require a huge capital investment. This is usual for a typical production scenario. These facts let the smaller companies enter the new markets and keep a smaller number of designers in autarky complemented by professional labour source from abroad. By using this hybrid model they can compete more flexible in a global market.
- The use of outsourcing determines the following benefits: economic effectiveness, the effectiveness of working hours, the use of nowadays technologies, developed competence in special areas, the upraising of living standard.
- The outsourcing decreases the costs of company and increases the productivity. In a long term both individual companies and economy receive the benefits because of decrease of costs and increase of profitability.
- The existence of international outsourcing depends on 3 factors: (a) fragmentation and benefits of outsourcing $c_i - c_u$; (b) transportation costs; (c) distance between the input producer and final product producer. The bigger is the advantage of costs $c_i - c_u$, the lower are the costs of transportation, and the outsourcing becomes more attractive in case of free trade equilibrium.
- Having carried out the analysis of costs of delivery of input from input producer to the final product producer, it is essential to consider, where the production of final product is developed. This information becomes very important making the decisions about investments.

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Išteklių nuoma tarptautinėje prekyboje

Santrauka

Galima teigti, jog šiuo metu išgyvename išteklių nuomos laikus. Įmonės sudarinėja sutartis su subrangovais, kurios plinta per visas veiklos sritis – nuo produkto projektavimo iki surinkimo, nuo mokslinių tyrinėjimų iki marketingo vystymo, paskirstymo ir aptarnavimo paslaugų pardavus prekę. Kai kurios įmonės nuėjo jau taip toli, kad tapo „virtualiais" gamintojais, kuriems priklauso daugelio produktų projektai, tačiau kurie negamina nieko patys.

Pasaulyje vykstant integracijos ir globalizacijos procesams, verslininkai aktyviau plėtoja veiklą kitose šalyse, pradedant tarptautine prekyba ir baigiant tarptautinėmis kompanijomis. Vertikalioji dezintegracija, arba vertikalusis skaidymas ypač aiškus tarptautinėje prekyboje. Įmonės ieško partnerių technologiškai ir įstatymiškai pažangesniuose bei labiau išsivysčiusiuose kraštuose arba ieško žemų atlyginimų žemesnio ekonominio lygio kraštuose. Moderniai pramoninei gamybai būdingas aukštas vertikaliosios fragmentacijos laipsnis. Tačiau akivaizdu, kad egzistuoja ne tik vertikalioji fragmentacija (susiskaidymas) kaip tokia, tačiau taip pat didėja ir gamybos suskaidymas tarptautiniu mastu, kuris atsispindi tarpinių produktų prekybos augime.

Mokslinė problema. Šiuo metu mokslininkai aktyviai analizuoja tarpinių gaminių ir įgaliotų komponentų prekybą, kuriuos pavadino „vertikaliąja specializacija", arba „globalinėmis gamybos dalybomis". Šis ekonominis procesas susiformavo dėl sparčios tarptautinės specializacijos plėtros įvairioms pramonės grupėms. Šiuo metu išaugusi tarpinių prekių arba verslo paslaugų išteklių nuoma yra vienas sparčiausiai augančių tarptautinės prekybos sektorių.

Tyrimo tikslas. Ištirti ir detaliau supažindinti su transportavimo kaštų įtaka išteklių nuomai tarptautinėje prekyboje; jos taikymo problemomis ir praktika nacionaliniu bei tarptautiniu lygmeniu.

Tyrimo uždaviniai. 1) Atskleisti svarbius nagrinėjamos temos teorinius ir praktinius aspektus; 2) Patikrinti ir pateikti tarpinių gaminių transportavimo kaštų įtakos apskaičiavimą ir panaudojimą praktikoje; 3) Panaudojant imitacinių apskaičiavimų metodus, išanalizuoti išteklių nuomą.

Tyrimo objektas. Išteklių nuomos panaudojimo galimybės tarptautinėje prekyboje.

Tyrimo metodai: mokslo šaltinių lyginamoji analizė, ekonominis-matematinis modeliavimas, statistinė analizė.

Teorinis pagrindimas. Šių dienų prekybos teorijos pradžia siejama su XVIII amžiaus ekonomistu D. Rikardu, kuris pirmasis aiškiai išreiškė santykinių privalumų pagrindą. Rikardo aiškino, kad dvi šalys plėtodamos sąnaudų (energijos, išteklių, medžiagų ir t.t.) mainus, specializaciją ir prekybą, galėtų pasiekti didesnį produktyvumą ir žemesnius kaštus nei tos pačios dvi šalys, jei gamintų izoliuotai viena nuo kitos. Rikardo analizės pagrindas – absoliučių ir lyginamųjų šalies privalumų individualumas.

Šalis turi įprastinės produkcijos gamybos santykinį privalumą, jei palankūs kaštai gaminant šią produkciją, palyginti su kita produkcija, yra mažesni negu kitoje šalyje. Rikardo santykinio privalumo pagrindas yra, kad leidžia šalims specializuoti gamybą tokių prekių, kurios suteikia santykinį pranašumą. Netgi jei šalis gali gaminti viską gerokai pigiau nei kita šalis, ji vis tiek koncentruojasi prie produktų, turinčių didžiausią santykinį pranašumą, tai yra, kur įgyjamas lyginamasis pranašumas, o visa kita importuojama.

Taip pat galima apibūdinti ir didžiuosius išteklių nuomos ginčus. Jei manytume, jog JAV turi lyginamąjį pranašumą aukštos technologijos sektoriuje (gynybos įranga, NASA erdvėlaiviai, super kompiuteriai ir t.t.), Indija, kita vertus, turi gamybos ir paslaugų lyginamąjį pranašumą (skambučių centrai, kompiuterių kodavimas ir t.t.)

Pirmasis išteklių nuomos paskirstymo veiksnys – šalies dydis gali paveikti jos rinkos „dydį". Įmonės labiau ieško vietos didesnėse rinkose, nes ten labiau tikėtina rasti partnerį su būdingais įgūdžiais, kurie įgalintų poreikį specialiai paruošti komponentus ar paslaugas pagal galutinio gamintojo poreikius. Antra, paieškos metodika veikia kaštus ir tikimybę surasti tinkamą partnerį. Paieškos mažiau kainuos ir bus sėkmingesnės šalyje, kuriose išvystyta komunikacijų, susisiekimo infrastruktūra. Trečia, technologija specifiniams komponentams veikia partnerio norus investuoti į prototipo gamybą. Galiausiai, besitariančių aplinkų skirtumai gali atsitrenkti į įmonės sugebėjimus įtikinti partnerį investuoti į bendradarbiavimą.

Moderniai pramoninei gamybai būdingas aukštas vertikaliosios fragmentacijos laipsnis. Grossman ir Helpman (2002) akcentuoja tai, kad bet kurios mažėjančios veiklos apimtys yra garantuojamos atskiroje kompanijoje

Be abejo, akivaizdu, kad egzistuoja ne tik vertikalioji fragmentacija (susiskaidymas) kaip tokia, tačiau taip pat didėja ir gamybos suskaidymas tarptautiniu mastu, kurį atsispindi tarpinių produktų prekybos augimas. Tarptautinės ekonomikos literatūroje teigiama, jog dabartinės globalizacijos bangoje svarbus vaidmuo tenka tiek nacionalinei (Burda ir kt., 2002), tiek ir tarptautinei išteklių nuomai. Siekiant suprasti kompanijų apsisprendimą naudoti tarptautine išteklių nuomą, t.y. faktorius, lemiančius tarpinių produktų prekybą, labai svarbu išnagrinėti transporto ir paslaugų kaštų ryšius**.** Vis dėlto prekybos modeliai dažniausiai ignoruoja nacionalinių prekybos sandorių kliūtis (šalies transporto kaštus). Behrens (2003) mano, kad būtent tai yra svarbi kliūtis ir vienas iš pagrindinių savitų požymių kai prekybos teorija lyginama su vietos teorija. Ohlin (1968) akcentuoja, kad „produktų transportavimo tarp šalių ar šalies viduje sąlygoja ekonominės veiklos lokalizaciją, paklausos geografiją, taip pat ir prekybos būdą" **(**Hendry, 1995, p.196**).** Taigi geografinis atstumas yra susijęs su neišvengiamais vietinio transporto kaštais. Todėl kruopšti nacionalinių ir tarptautinių transportavimo kaštų analizė pasaulyje, kuriame technologiškai įmanoma išteklių nuoma, yra ypatingai svarbi. Tokiai analizei atlikti pateikiamas modelis, paaiškinantis erdvės dimensijas tarp šalių.

Tyrimo eiga. Siekdami išanalizuoti šį suderinimą pirmame etape, teoriškai analizuosime nepilnos pusiausvyros modelį a la Hotelling su vienu galutinių prekių gamintoju, įsikūrusiu linijinės ekonomikos centre, ir palyginsime uždaro ūkio pusiausvyrą integruotos gamybos ir nacionalinių išteklių nuomos atvejais. Antrame etape nagrinėsime laisvosios prekybos pusiausvyrą tarp dviejų skirtingų dydžių šalių. Priešingai nei ankstesni tik galutinių prekių prekybos modeliai, a la Hotelling sistema parodo, kaip visos susijusios ekonomikos gali tapti turtingesnės. Tai svarbu suprasti, kadangi daugelis ekonomikų siekia dalyvauti laisvosios prekybos susitarimuose, tokiuose kaip ES ar NAFTA.

Siekdami parodyti prekybos liberalizavimo poveikį, atskiriame trumpalaikius (kompanijos įėjimo ir išėjimo bei vietos pasirinkimo sprendimai) ir ilgalaikius efektus. Tai palengvina paaiškinimą ir leidžia atskirti grynus konkurencijos efektus nuo vietos pasirinkimo bei įėjimo ir išėjimo efektų. Atsižvelgdami į galutinių produktų gamybos būdus, dominuojančius laisvosios prekybos pusiausvyroje, apsvarstysime keletą skirtingų scenarijų, apimančių empiriškai svarbius šalies išteklių nuomos didelėje ekonomikoje ir tarptautinės išteklių nuomos mažose ekonomikose atvejus.

Analizė prisideda ir prie diskusijos apie tarptautinio atvirumo rinkos sluoksnių efektus. Kaip ir McLaren (2000), mes galime parodyti, kad nykstantys prekybos barjerai daro poveikį pramoninės gamybos struktūrai, t.y. tam, ar kompanijos naudoja integruotą, ar išteklių nuoma pagrįstą gamybą. Vis dėl to gauti rezultatai aiškiai parodo, kad tai gali sąlygoti priboškiančius verslo liberalizavimo efektus, susijusius su aukštu galutinio produkto gamybos vertikaliosios fragmentacijos laipsniu. Tai naujas pastebėjimas; jis priešingas McLareno „teisei" didinti išteklių nuomą ir turėtų būti savotiškai aktualus empirinei prekybos liberalizavimo efektų analizei.

Nuomodama gamybos paslaugas kompanija dalį gamybinių grandies procesų arba visą ciklą atiduoda kitai kompanijai.

Kaip pavyzdį galima nagrinėti bendrąjį gamybos ir prekybos pusiausvyros modelį, kuriame vienos pramonės šakos įmonės nuomoja specifines veiklas iš kitos pramonės šakos įmonių. Tokios įmonės ieško partnerių, kurie technologiškai yra pasirengę patenkinti nuomotojo poreikius. Šiuo atveju įmonių galimi sprendimai jungia tris modernios išteklių nuomos strategijos požymius, kurie, mūsų manymu, yra esminiai:

1. Įmonės privalo surasti partnerį, galintį atlikti reikalingas specifines veiklos rūšis;

2. Šios įmonės privalo įtikinti potencialius tiekėjus gaminti produktus pagal specifinius užsakymus ir jų poreikį;
3. Nuomotojas turi sužadinti reikalingas specifinės partnerystės investicijas aplinkoje su neišbaigta sutartimi.

Pirmasis išteklių nuomos paskirstymo veiksnys – rinkos dydis. Įmonės nuomotojos privalo įsitikinti, kad yra reali tikimybė rasti partnerį su būdingais įgūdžiais, kurie įgalintų poreikį specialiai paruošti komponentus ar paslaugas, atitinkančius galutinio gamintojo poreikius. Antra, paieškos metodika veikia kaštus ir tikimybę surasti tinkamą partnerį. Paieškos mažiau kainuos ir bus sėkmingesnės rinkoje, kurioje išvystyta komunikacijų ir susisiekimo infrastruktūra. Trečia, technologija specifiniams komponentams veikia partnerio apsisprendimą imtis reikalingų investicijų.

Siekiant įrodyti visus esminius faktorius, lemiančius galutinio gamintojo apsisprendimą, ar nuomoti išteklius, ar toliau tęsti integruotą gamybą, šiame darbe analizuojamas vienos Lietuvos įmonės, įsikūrusios šalies centre, tipinio galutinio produkto gamybos procesą. 15 metų įmonė vykdė 100 % integruotą šio gaminio gamybą. Pirmuosius 5 metus įmonė pagamindavo vidutiniškai po 10 gaminių kasmet. Kadangi gaminys technologiškai sudėtingas jam pagaminti reikia daugybės operacijų, kurias atlieka aukštos kvalifikacijos darbuotojai.

Išaugus paklausai rinkoje, gerokai išaugo ir vidutinis metinis galutinių gaminių poreikis. Dėl šių aplinkybių įmonė privalėjo kasmet didinti apimtis ir plėsti gamybą. Nuspręsta didinti gamybos apimtis, vystant tas technologines gamybos grandis, kurios sukuria didžiausią pridėtinę galutinio gaminio vertę, o metalinės įrenginio konstrukcijos gamybos išteklius nuomoti iš specializuotos metalo konstrukcijų gamybos įmonės.

Taigi buvo iškeltos trys pagrindinės užduotys:

1. Rasti reikiamos kvalifikacijos partnerį;
2. Suderinti metalinės konstrukcijos gamybos technologiją;
3. Išanalizuoti visus ekonominius faktorius, susijusius su esamų integruotos gamybos ribinių kaštų mažinimu ir galutinio gaminio pelno maksimizavimu.

Tyrimo rezultatai. Apskaičiavimų ir analizės rezultatai parodė, kad galutinio gamintojo apsisprendimą sąlygoja ekonominiai, technologiniai ir kokybiniai kriterijai. ***Kokybiniai*** kriterijai siejami su patikimo partnerio arba tarpinio produkto gamintojo radimu. Galutiniam gamintojui svarbu rasti partnerį, kuris laiku tiektų reikiamos kokybės tarpinius produktus, laiku atitaisytų nekokybiškus gaminius arba pakeistų juos naujais, o iškilus netesyboms, būtų finansiškai pajėgus atlyginti susidariusius nuostolius. ***Technologiniai*** kriterijai neatsiejami nuo paties tarpinio produkto. Galutiniam gamintojui svarbu, kad tarpinio produkto gamintojas arba išteklius išnuomojanti kompanija turėtų reikiamą technologinę įrangą ir reikiamos kvalifikacijos personalą. Dar galutinio gaminio gamintojui svarbu, kad tarpinis gaminys būtų pagamintas laikantis numatytos technologijos, ir pagamintas gaminys atitiktų visus keliamus kokybinius reikalavimus. ***Ekonominiai*** kriterijai galutinio produkto gamintojui yra patys svarbiausi. Šiuo atveju galutinio gaminio gamintojas turi įvertinti, ar jam apsimoka tęsti integruotą gamybą, ar geriau išteklius nuomoti iš tarpinio gamintojo. Taigi galutinis gamintojas turi numatyti ribinę kainą, kurią dar gali mokėti tarpinio produkto gamintojui.

Remdamiesi a la Hotelling modeliu, tariame, kad galutinio gaminio gamintojas yra šalies viduryje. Visi potencialūs tarpinio produkto gamintojai atitinkamai išsidėstę po visą šalį. Didžiausias atstumas (pvz., Švedijoje) siekia apie ~1500 km, taigi tarpinio produkto gamintojas gali būti labiausiai nutolęs apie ~700 km. Kadangi gaminiui transportuoti reikalingo transporto vieno kilometro rinkos kaina siekia 1,1 €/km, nesunkiai įvertinsime transportavimo kaštų priklausomybę nuo tarpinio produkto gamintojo vietos. Kaip rodo tarpinio produkto gamintojo kaštų analizė, kuo tarpinio produkto gamintojas yra arčiau galutinio gamintojo, tuo mažesnė tarpinio produkto kaina. Taigi prieiname prie išvados, kad tarpinio produkto gamintojui naudingiausia įsikurti arti galutinio gaminio gamintojo, nes tada jis gali tikėtis uždirbti didžiausią pelno maržą.

Norint išsamiau suprasti galutinio gamintojo ir tarpinio produkto gamintojo bendradarbiavimo bei partnerystės apsisprendimą tarptautinėje rinkoje, atlikta Švedijos ir užsienio rinkų tarpinio produkto gamintojų analizė. Buvo lyginami abiejų šalių tarpinių produktų gamintojų kaštai, gaminių kainos ir transportavimo išlaidos, reikalingos tarpiniam gaminiui pristatyti į galutinio gamintojo gamybos vietą.

Uždarame ūkyje galutinio gaminio gamintojas yra šalies viduryje, ir nacionaliniai tarpinio produkto gamintojai nuo jo yra nutolę tolygiai. Tarptautinėje rinkoje arba bendradarbiaujant su kita šalimi, tarpiniai gamintojai bus kur kas labiau nutolę nei bet kuris kitas nacionalinis tarpinis gamintojas. Todėl galime teigti, kad kuo labiau nutolsta tarpinio produkto gamintojas, tuo mažesni turi būti jo gamybos kaštai, nes antraip šio gamintojo kaina bus per didelė ir viršys galutinio gaminio gamintojo ribą.

Apibendrinant atliktą tyrimą galima padaryti tokias išvadas:

- Išorės paslaugų nuoma (angl. outsourcing) – tai efektyvi verslo strategija, kai įmonė sudaro sutartį su išorės organizacija, kuriai pavedama atlikti bet kurios rūšies jos specializuojamą veiklą, tuo tarpu tos rūšies pačioje įmonėje veikla nėra dominuojanti. Remiantis šia strategija, kiekviena įmonė gali jos nekompetencines dalis perduoti kitai įmonei. Taigi išteklių nuoma tampa nauju verslo modeliu, kai įmonė tesirūpina savo prekinio ženklo populiarinimu bei marketingu, visa kita perleisdama atlikti išorės tiekėjams.
- Atlikta teorinė analizė leidžia suprasti, kad paslaugų nuoma kaip verslo strategija turi galimybę išskirti šakinės kompetencijos svarbumą. Įmonė gali pasirinkti kritiškas, pagrindines sritis, kur sukuriama didžiausia pridėtinė produkto vertė, o neesminių paslaugų išteklius nuomotis iš tiekėjų. Toks procesas, kai dauguma organizacijos procesų yra nuomojami iš išorės, apibrėžiamas ekonominiu reiškiniu – išteklių nuoma.
- Išteklių nuoma – tai daugiau negu pirkimas žaliavų ir tarpinių produktų. Tai radimas tinkamo partnerio, su kuriuo įmonė gali sukurti dvišalius santykius. Turint partnerį, padėti jam suvokti investicijų svarbą į tarpinio produkto gamybą. Skatinti rasta partnerį tapti pajėgiam gaminti prekes arba teikti paslaugas, atitinkančias įprastinius galutinio gaminio gamintojo poreikius.
- Daugelyje profesionalių paslaugų veiklos pradžios kaštai yra žemesni ir nereikalauja milžiniškų kapitalo investicijų, o šiaip būtų įprasta tipiniam gamybos scenarijui. Šie faktai leidžia mažesnėms kompanijoms įeiti į naujas rinkas ir išlaikyti negausius projektuotojus šalies viduje, o tai yra papildyta dideliais profesionalios darbo jėgos ištekliais iš užsienio. Naudodamos šį hibridinį modelį, jos gali lanksčiau konkuruoti globalinėse rinkose.
- Išteklių nuomos panaudojimas sąlygoja tokius privalumus: ekonominį efektyvumą, darbo valandų efektyvumą, šiuolaikinių technologijų panaudojimą, išaugusią kompetenciją savo srityse, padidėjusį konkurentiškumą, gyvenimo lygio standarto pakilimą.
- Tarptautinė išteklių nuoma priklauso nuo 3 veiksnių: (a) fragmentacijos ir išteklių nuomos kaštų privalumo $C_i - C_u$; (b) transporto kaštų; (c) atstumo tarp galutinių prekių gamintojo šalyje ir tarpinių produktų gamintojo. Kuo didesnis kaštų privalumas $C_i - C_u$ ir mažesni transpotavimo kaštai, tuo patrauklesnė laisvosios prekybos pusiausvyroje išteklių nuoma.
- Atlikus tarpinio gaminio transportavimo galutiniam gamintojui kaštų analizę, galima teigti, kad, renkantis tarpinio produkto gamintoją, būtina atsižvelgti į tai, kurioje vietoje yra vystoma jo gaminio gamyba. Ši informacija tampa labai svarbi, priimant investicinius sprendimus.

Remiantis atlikta išteklių nuomos ir tarptautinės priklausomybės analize, ateityje galima būtu atlikti makroekonominio lygmens tyrimą ir nustatyti:

- kokie makroekonominiai rodikliai sąlygoja vienos šalies įmonių apsisprendimą ieškoti tarpinių produktų gamintojų užsienio rinkose;
- kokie makroekonominiai rodikliai turi didžiasią įtaką apsisprendžiant dėl šalies, kurioje galutinio gaminio gamintojas ieškos tarpinio produkto gamintojo.

Raktažodžiai: *išteklių nuoma, gamybos išoriniai ištekliai, gamintojų pajamos, tarptautinė rinka.*

The article has been reviewed.

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