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Design and Simulation of Coopetition as Lead Generating Mechanism*

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Abstract This paper considers coopetition as form of interaction between companies and agents. As the method to analyse coopetition internet-based platform is used and modeled. The most important part of the research is simulation of lead-generation internet-based platform. As a result, potential industrial impact that can be caused by a lead generating internet platform-based coopetition among companies, which operate in one industry.

Keywords: coopetition, internet-based platform, lead generation, agent-based simulation.

1. Introduction

There are several ways of possible interaction among organizations. One of the classifications gives us four following types: competition, collaboration, coexistence and coopetition (Bengtsson and Kock, 1999). Coopetition is a kind of interaction, when firms cooperate and compete to each other (operating in one industry) to improve their financial results (Brandenburger and Nalebuff, 1996). In other words entering a coopetition firms try to increase the values of the whole market to share it in competition later: "to create a bigger business pie, while competing to divide it up" (Walley, 2007). One of the best explanations of the phenomena coopetition refers to Kirk S. Pickett who in 1913 described the relationship among oyster dealers, saying that all of them are not just in competition with each other, but in cooperation developing more business for each participant of the market, which means that these oyster dealers in co-opetition now, not in competition (Cherrington, 1976). Basing on all abovementioned information we can derive that coopetition is a kind of competition in terms of cooperation, when all players try to make market on which they play "bigger", to share this "bigger" market among them by competition activities.

In other words coopetition is an inter-firm strategy, when companies at first focus of the increase of the profit that their industry can give to them. At that stage they try to make bigger the market or sphere of business that they operate on, companies start some kind of collaborative relationships among them. As the additional value is created, companies start to be rivals to capture the biggest part of this additionally created value on their own. As a result there is an increasing chance to create a common win-win situation for the whole industry for all its participants through a larger market creation (Liu, 2013).

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One of the argumentations "For" coopetition as a choice of inter-firm relationships that have a potential to capture additional value is the resource-based argumentation (Lavie, 2006). One of the general strategies used in terms of alliances is to use supplementary and complementary resources in an integrated way. Such approach has a potential to create more value comparing to the cases, when abovementioned resources are used separately. This additional value could be expressed in innovations, differentiation of organizations, cost reduction, expansion of the market, cooperative manufacturing and distribution of products. Another potential field of coopetition-based type of interaction between companies that stands on the idea of resources is their utilization. Through cooperation organizations manage to create an additional value through cooperative utilization of their resources. At the same time they manage to capture some individual portion of Joint-created values through the utilization of their specific resources (Ritala and Hurmelinna-Laukkanen, 2009). Nowadays coopetition velocity increases dramatically, which can be proved by recent researches in ICT sector (Basole, Park and Barnett, 2015).

If we analyse motivation of companies to enter coopetitional relationships with other organisations, there is one of the main reason – improvement of their competitive positions. This could be reached through inter-organisational learning practices and reception of valuable and strategically important resources from such interactions (Luo 2004). However these are not the only way of competitive position improvement. There are many examples such as (Garrette, Castaner and Dussauge, 2009; Tong and Reuer, 2010; Rothaermel 2001):

- Adaptation of partners experience and knowledge: When organisations enter close relationships (as coopetition or cooperation) they enter a common "knowledge pool". Participation in such pool gives them a chance to obtain some knowledge and experiences from their competitors;
- Common establishment of new knowledge: Through coopetition organisations are able to combine their creative skills to generate some new knowledge, which can be used by a particular coopetition group. Such knowledge provides all members of this group with additional competitive advantage;
- Joint research and development: Entering joint R&D projects companies get a chance to manage risks and increase budgets of research activities;
- Defence from innovations (radical ones) that potentially can damage a company: Getting in touch through coopetition with key competitors organisations can get an opportunity to protect their business from sudden appearance of radical innovations on the market. That could be reached through creation of common informational field, knowledge sharing and common R&D projects;
- Creation of entry barriers for newcomers and foreign competitors: coopetitional inter-actions of organisations provide them with a potential to defend their territory with help of price, technology or market instruments;
- Getting cost reduction through the increase of scale of some operations that can be done in coopetition (upstream ones): For example, if five organisations make one order from a supplier of goods, they can get a sufficient discount and reduce their costs significantly.

Understanding coopetition and its potential from the perspective of value addition and profitability it is important to analyse and examine potential conditions that might cause effect on the process of formation of coopetition among companies. There are at least five issues that cause influence on this process:

Environment: Coopetitive strategy of organisations can be influenced by context in which these companies operate. This context can be described by the governmental policy, resources peculiarities, competition level, quality of services and others (Lado, Boyd and Hanlon, 1997). For instance in environment where companies have a high probability of intervention from abroad, organisations will have a motivation to cooperate to protect their market and at the same moment of time to compete for the market that they defend. In such case organisations have more motivation to cooperate, so coopetition starts to be up-stream dominated. As an opposite, if organisations face the situation when there is a little possibility of intervention, there is a chance that companies start to compete more than cooperate.

Nowadays many industries face a dramatic growth of competition due to such factors as internationalisation, innovation growth, internet development and etc. As a result organisations have to find solutions, how to fight uncertainties that arise from such situation. That brings competing sides to the idea of cooperation with each other (Burgers, Hill and Kim, 1993).

As an example, when companies face a problem of innovations that have a potential to change the whole market and cause effect on the choice and reactions of customers, cooperation among rivals can move its focus to the question of adaptation of organizations to the quickly changing environment. Doing this together companies increase their chances to succeed and stay on the market (Burgers, Hill and Kim, 1993).

Coopetitional costs: Entering a coopetition with other organisations, company has to pay attention to the fact, that occasionally such relationships cause some additional costs to arise (coopetitional costs). Such costs appear due to increasing complexity of relations that come from growth of participants (Lado, Boyd and Hanlon, 1997). As coopetition involves a cooperative component, it is possible to assume that some concepts of cooperation theory are applicable to coopetition concept. Cooperative theory describes costs that arise when companies try to maintain the cooperative relationships and potential losses connected with an opportunistic behaviour. All these issues definitely can cause some effects on the form of coopetition among organisations. It is vital for organisations, to get overwhelm these costs with incomes and value that coopetition that they enter can bring to them. Due to this, companies probably have to think, which benefits such coopetition should bring to them.

Size of companies: Small and large organisations statistically are less interconnected with their partners comparing to the medium-sized organisations. Due to the tendency that small companies usually niche ones, they do not have enough power and competitive potential to cause any influence on their industry or alliance that they enter. Situation around large organisation is affected by the antirust policy of modern governments, which put relations among big companies under a strict monitoring and try to coordinate them. Also it is important to admit, that big international organisations have access to much more resources in comparison with SMEs, as a result motivation to cooperate among these organisations decreases. Medium companies at the same time already have some possibilities to cause some influence on their industries, but still are not big enough to face all difficulties connected with market turbulence alone. That makes intermediate companies an ideal subject for cooperative relationships (Burgers, Hill, and Kim, 1993), and potentially make coopetitive inter-actions at lease potentially interesting for them.

How coopetition effects on the competition on a particular market? That question is examined mostly from the perspective of how cooperation influences on the market. However there are also some researches made in coopetition context (e.g. Oxley et al., 2009).

Different researches provide quiet opposite data. While one group of researches provide us with the information and evidence, that cooperation among organizations reduces the degree of competition on the market (Tong and Reuer, 2010). Another group of scientists state that cooperation and coopetition cause an increase of competition on the market (Gnyawali, 2006). Common research and development programs (widely announced on a particular market) also cause some positive affect on the particular market value, not only on members of coalition, but also on other companies, that do not enter this coalition. Basing on this research authors state that there could be observed an increase of prices of shares of companies that do not enter an alliance could be a result of expected decrease of competition on the market (Oxley et al., 2009).

At the same time coopetition has some potential problems for companies. There are some risks for opportunistic behavior (Brandenburger and Nalebuff, 1996), when participants can act selfishly when particular circumstances provide them a chance for this. This can be connected with knowledge expropriation, breach of trust and etc.

Basing on the assumption, that coopetition can be risky, companies that enter it, can have some problems with the trust-building issues. Some sources and researches suggest that the most significant role in the trust building process goes to a calculative process (Faulkner, 2000; Lewicki and Bunker, 1996). Dyadic coopetition depends mostly on the cost-benefit analysis. Absence of benefits that individual can calculate makes other trust-building mechanisms not sufficient for starting some kind of coopetition. Emotional base plays some kind of moderating role. Reputation based trust decreases opportunistic risks, but tends to be not sufficient enough for the coopetition decision procedure. Analysis of potential partner capabilities tends to be a part of the cost-benefit analysis (Czernek and Czakon, 2016). However the problem of trust could be potentially avoided if there would be no potential interactions between participants of a coopetition. Instead of this organizations could interact with a third party, whose main interest would be a coopetition as it is. That party could have its interest from the additional value that was gained through a coopetition. That makes this third party potentially more credible than other participants of alliance, who can try to get their profit with cheating.

The phenomenon of coopetition arises various questions such as trust building among organisations or security of companies that choose a coopetition as a strategy (Czernek and Czakon, 2016). Also academic literature demonstrates various attempts to classify different coopetition strategies, types and activities through analysis of actual experience of organisations (Rusko, 2011).

One of instruments, that could be used as a base for a coopetition as a strategic tool for the whole particular industry is an internet based platform. The phenomenon of internet platform (e-platform) is a modern one (Armstrong, 2006). Its current popularity became possible with a rapid development of internet all around the world. The most frequent type of internet platforms is a multisided platform, which provides services for different (usually interconnected) groups of users.

Due to its mechanics, internet based platforms already started to provide services for competing companies. There are many types and forms of services, which are provided at this moment of time. There are even come examples of platforms that operate on the principles of coopetition (Ritala, Golnam and Wegmann, 2014).

At present moment of time, question of a coopetition strategies, that could be ran through platforms is examined from the descriptive point of view with the means of case analysis tools. However questions of possible influence on some particular industry of one of coopetition strategies organised on base of an internet platform is not examined as it could be and could be also classified as a research gap. Filling this gap could be valuable as from the perspective of academic knowledge, as from the practical usage of coopetition strategies in modern economy.

2. Two-sided platforms

Nowadays we face a significant growth of popularity of platforms that launch and maintain interactions between two or more parties (sides) (Caillaud and Jullien, 2003; Rochet and Tirole, 2003; Armstrong, 2006) – such as Airbnb, Amazon, and Uber.

In terms of current research internet platforms theory and concept of multi-sided market is used mainly to describe a tool (two-sided platform) that could be used as a base for the lead generating coopetition. These platforms manage to create value gain incomes from intermediation between different parties of users, satisfying their needs (Osterwalder, Pigneur and Smith, 2010). Occasionally sides that get into the focus of multi-sided platforms are business audience that provides market with some kind of services or goods, and customers that could be described as end-up users. The first group of users also could be called as advertisers (Rochet and Tirole, 2003).

The most part of researches admit that focus on more than one side if a relevant characteristic that describes modern industries in different extent (depends on the industry). "Multisideness" became a new strategic tool, which is widely used by many organizations that manage to demonstrate significant results.

Two-sided markets work with the intragroup and intergroup network effects which are also called cross-group effect one of the definitions of which is: cross-group network effects occur. The benefit enjoyed by a user on one side of the platform depends upon how well the platform does at attracting users on the other side (Amstrong, 2006). Basing on this we can see that YouTube could be called a two-sided internet platform which operated with the above-mentioned phenomena of cross-group effect, when its revenues from advertising depend on how regular video subscribers are satisfied. Another significant example of a multi-sided platform is Amazon company, that moved from a simple retailer to the two-sided model, adding another retailers to its business process, and suggesting them to sell their products on the internet based platform, called Marketplace (Ritala, Golnam and Wegmann, 2014) and as it was mentioned before, Even though many of analytics tried to persuade Amazon, that such approach is too risky, today we can see, that that move became a significant step that gave the company (Amazon) a chance to survive and continue its growth.

Concentration on clients and on the market development (not on competitors), gave Amazon a boost for the further development, which gives it a chance and fuel to develop not only their own company, but the whole on-line industry, giving us

a chance to propose that platforms, designed following the principles and goals of coopetition have a great potential to everybody.

One of the key questions of internet based markets that focus on more than one side is to determine, which of the sides provides a more significant contributions to demand of its complement (the other side). In other words there is a question, why parties might join the internet platform. As a result we can meet the idea that consumer side sees as a motive any benefits and additional values that are offered by Internet platform.

At the same time, producer side has motives that are mainly linked to the number of potential customers that are classified by this business as a target audience. Second possible reason for service providers to start being a user of some platform is a possible usefulness of information and data that could be collected from its audience. As an example of the second reasoning there are some proofs that B2B companies that tend to be involved in two-sided markets usually get benefits from the private data, that their consumers leave on platforms they use (Fish 2009). One of the possible outcomes from such information could be a well-concentrated advertising, those bases on the personal information (age, gender etc.) of users of such social networks as Facebook.com or vk.com. This information could be used to define whether some person could be a potential user of some services or not.

One more significant peculiarity of multi-sided platforms as a form of business model is that usually on of the sides is not charged for the value, that it gets from the platform. Occasionally end-up users category (customers) is not charged for platform usage (that get some services of the platform for free), while business participants that intend to sell their product or to get some valuable data act as subsidizers paying to reach their target audience. That means that platforms need to find and demonstrate a good reason for end-up consumers to join the platform for free, so that there could be created a significant value for services and goods suppliers (Mahadevan, 2000).

Abovementioned peculiarities connected with the value creation issue for two different groups of users, pushes the most pert of internet platforms to the business model that consists from a set of steps. Movement from one step to another demonstrates the evolution of a business model that seems to by typical for many successful internet ventures (Muzellec, Ronteau and Lambkin, 2015). On early stages internet platforms concentrate on the values proposition towards end-consumers, persuading them to join a platform. At this stage platforms usually ignore any other sides. That continues until the number of users of a platform reaches some kind of critical mass that could become interesting for B2B clients of the platform. At the second stage of development platform moves its focus on business that is interested in end-up customers, which were already attracted to the platform. At this stage platform starts to get its first revenues. After venture reaches its first financial goals it moves to the third stage, which could be characterized as a reconsideration of all its services it order to increase the value for both sides of their users. Authors call this business model as B2BandC oriented model (Muzellec, Ronteau and Lambkin, 2015).

Also researchers focus mainly on coopetition effects in the scale of one company. As a result, nowadays there is a deep understanding of "What individual companies can achieve from a coopetition". However, due to the fact that even though coopetition starts to emerge as a strategy, it still remains not so common practice.

As a result there are few possibilities to explore effects, which coopetition is able to bring to the whole particular market or industry.

3. Questions to answer

To design of a concept of internet platform-based coopetition among organisations with a base upstream activity aimed at the generation of leads, we have to answer following questions:

- What is the possible impact of a lead generating coopetition on companies with different price and quality strategies?
- How the number of the coopetition process participants influences on the effectiveness of lead generating coopetition?
- How the number of the coopetition process participants influences on average utility that clients get?

4. Agent-based model simulation

To answer the abovementioned questions it is needed to evaluate possible outcomes of a complicated system functioning. Such outcomes tend to be hardly evaluated and predicted with simple mathematical calculations. Also it is important to pay attention to the fact that possible outcomes of such system functioning depend on various decisions of different participants of a market (competitors, clients). Abovementioned conditions tend to be reasonable grounds to take a simulation of agent-based model as a way to test effectiveness of a suggested concept of competition interaction.

Simulation is used mainly in researches, when complexity of examined systems becomes so high that basic simple calculations are not enough to get some significant results. In academic researches simulation is described as a problem-solving method (Banks, 2000). The main idea of simulation is to build a model, which could be able to describe real processes at some extent (Law and Kelton, 2000). One of possible applications of a simulation is a prediction of possible results of processes with different values of variables.

To run the simulation a model is required. In terms of the current research author uses agent-based modelling (ABM). The main component of ABM is the "agent". The whole simulation in case of AB modelling bases on functions and parameters of agents, that define what they are, what they do and how they behave (Wooldridge and Jennings, 1995). In ABM agents get some set of rules that define their:

- Boundaries - their limitations, interconnections with other agents and etc;
- Behaviour and decision-making capabilities – describe how agents make their choice under various circumstances.

AB models describe the interactions of various agents that are situated in different situations and receive some programmed inputs concerning the state of environment and different agents. When agents get these inputs, they respond basing on some logic. Actions of agents of ABM can be reactive and proactive, basing on their objectives, environment and rules of a model (Wooldridge and Jennings, 1995).

In other words AB modelling operates with the modelling of the behaviour and interactions of various agents with different objectives and parameters, in an

environment defined by some set of rules and principles, over time. It is important to pay attention to the fact that agents can act on their own basing on their personal goals, or share some common goals, acting in an organisational context (Jennings, 2001).

There is a string view that AB modelling suits the best, situations that run without or with a small influence of central coordination on the behaviour of agents. In other words agent base models are used to simulate bottom-up problems and cases, when behaviour and decisions of individual agents can cause some global effects and trends (Macy and Willer, 2002).

However, in terms of the current research there is a number of terms and limitations that make it possible to build a simulation that could be used as a base for some conclusions and further analysis.

1 AB model built in terms of current research assumes that there is only one product on one market, with no other goods, which could cause any effect on choice of customers;
2 There is only one advertising tool, used on the market – Pay Per click advertising. Other advertising and marketing instruments cause no effect on number of leads, that organisation gets;
3 Each client makes his choice basing on the principles of Utility maximisation;
4 Each client makes his purchase only once in terms of one simulation.

5. Data collection

When the model is described and built, it is important to set its parameters. It was decided to use parameters from the real world (from some industry that potentially could apply lead generating internet platform-based coopetition). it was decided to use Russian web-design market, due to the ready availability of data that describes this industry.

Basing on web-design market research conducted by the Russian analytical portal CMS magazine there was taken the following data:

- Number of companies that currently operate on Russian web-design market;
- Average turnover of web-design studios in different regions of Russia;
- Segmentation of companies basing on the price criteria;
- Identification of instruments that web-design studios use a lead generating tool.

There were two prior methods of data collection (CMS magazine, 2012):

- Questionnaire that was answered by 450 executives of Russian web-design studios (see Appendix 5);
- Data collected from 1234 organisations, basing on the profiles of companies registered on web-portal “Runet Rating” (http://www.ratingruneta.ru).

Basing on the information provided by Yandex Direct budget planning tool there was received information concerning Pay-per click advertising tool parameters and some information about the market potential (Yandex, April 2016):

- Cost per-click rates;
- CTR rates;
- Number of potential clients.

Yandex is a Russian search engine, which provides services of PPC advertising for organisations that try to find clients on the Russian market.

Statistics of conversion rates (CVRs) of web-sites of organisations from different spheres of business was taken from the survey made by online advertising company "WordStream" among 1,000 landing pages. There was analysed the statistical probability and its distribution (basing on the statistics of these landing pages) that people will leave their request on services, provided on particular web-page. Later this statistics was separated to different industries (Kim, 2014).

To define, which percent of total revenue organisations invest into advertising there was used a statistics provided by The CMO Survey in terms of the annual research of marketing trends. Information was taken from 3120 organisations that operate in different spheres of business. There was made an e-mail contact survey with follow-up reminders. As a result there was a 9.3% respond rate (289 respondents). Research was held from January to February 2016 (The CMO Survey, 2016).

Data, taken from the abovementioned sources was used to define the borders of key parameters that describe the environment and agents behaviour and characteristics in terms of current research.

6. Experimental design

Current research is based on the experimental design which tests the model with different parameters. Tests with various parameters provide author with the outputs, which are used by to detect trends, impacts and phenomena that could be used as a base for hypothesis testing.

The simulation of a lead generating platform-based coopetition evaluates the following outputs:

- ROAS: Revenue on assets spent by company (or coalition) on advertising;
- Profit: Difference between total income gained in terms of one simulation and money spent on advertising.

The simulation of a AB model in terms of current research is made on the base of a AnyLogic 7.3.1 Personal Learning Edition. It is a program based on Java program language that works with agent-based, discrete event, and system dynamics modelling approaches. The main reason for using AnyLogic is its availability. The version used by author is free of charge. Also AnyLogic provides its users with a graphic interface, which simplifies the process of modelling and simulation. Due to the peculiarities of this version of the software there are only two ways of distribution used to describe the parameters: union and triangular distributions.

7. Description of lead generating internet platform-based coopetition

The concept of a lead generating internet platform-based coopetition (LGIPBC) bases on the idea of co-invested advertising campaigns of the product. Companies, which distribute the same product, gather into coalition on the base of the internet platform (Operator). Operator provides coalition that gathers on its base a web-page and runs an advertising campaign on the advertising budget of the coalition. Advertising campaign generates traffic of potential clients on the web-page of the coalition. Generated traffic convers into requests for product distributed by members of the coalition (leads). Each lead, generated by a co-invested advertising campaign

of the coalition, spreads among all members of this coalition, and after members of the coalition get lead, they start competing for it, with their sales strategies. Described concept includes competition and cooperation at different stages of their interaction process. That means that it can be classified as a concept of a coopetition among companies (Brandenburger and Nalebuff, 1996).

Operator charges members of a gathered coalition for its organization, coordination services and organization of the advertising campaign on the budget of the formed coalition. Operator offers companies that produce the same product to join one of coalitions. Coalitions base on groups of companies allocated by the Operator on the market of one particular product. Allocation of groups bases on characteristics of product distributed by companies on the market. Following characteristics could be used as a base for a group allocation process:

- number of functions;
- quality of design;
- price.

Operator also provides participants with a forecast of possible average price of one lead, that participants can get. Possible average price of one lead is inversely related to the number of companies that enter a coalition.

Each organization decides, whether it is ready to join one of announced coalitions or it rejects the offer made by the Operator. If organization accepts the offer than it needs to decide, coalition on base of which exact group it joins (basing on its own perception of its product and its strategy).

The main benefit that members of each particular coalition get is a decrease of average price for one lead. This is archived by the following mechanism:

1 Each company that wants to join a coalition pays an entrance fee of this coalition. Entrance fee is set by the Operator;
2 Total sum of the entrance fees, paid by members of the coalition is used by the Operator as an advertising budget;
3 Operator distributes advertising budget of a particular coalition on the advertising instruments that attract traffic of potential clients on the web-page of the coalition;
4 That traffic of potential clients converts to leads;
5 Operator provides all members of the colocation with a full access to all leads, generated by the web-page of this coalition.

As a result each member of the coalition gets leads that were generated on advertising budget of the coalition. Web-page of the coalition generates more leads with a cheaper price of one lead for one member of the coalition, if we compare it to the price of one lead generated by a solo advertising campaign led by one company for its own brand.

When participants of the coalition start getting leads, competition part of the LGIPBC begins. At this point everything depends on the specific features of participant's individual marketing policy, their sales systems, quality of the product and etc. After all leads are given to all members of the coalition, Operator stops the LGIPBC session and suggests members to join the next one.

There are three main stages of LGIPBC:

- Coalition partition stage;
- Co-invested lead generation (cooperating activities);
- Competition for customers.

As it was mentioned before Operator is an internet platform. The first group of users of this internet platform consists of companies, which distribute some product. The second group of users (second side) is represented by individuals and organisations, which could be potential customers of the first group of users of the internet platform. That means that this platform could be classified as a two-sided internet platform (Amstrong, 2006).

Basing on the conclusion that Operator is a two-sided internet platform, there are grounds for discussion of functions and services that could be provided to the second group of users (potential clients of the first group). However, in terms of the current master thesis, this issue is not discussed due to the fact that, from the standpoint of author, it does not refer to the coopetition in a straight way.

8. Coalitional partition stage

Coalitional partition is held among all companies that produce the same product (Companies) with different levels of characteristics that describe it. $N = \{1, \ldots, i, \ldots, n\}$ – set of Companies, $n > 0$, number of Companies, $i \in N$ – current Company.

Each Company i produces a product that can be descried in some way. Operator announces characteristics of this product (Characteristics). $\mathrm{R} = \{\mathrm{R}_1, \ldots, \mathrm{R}_k, \ldots, \mathrm{R}_r\}$ – set of Characteristics, r – number of characteristics. $R_k \in R$ – particular characteristic.

After a set of Characteristics was announced, Operator defines maximum and minimum levels of each Characteristic on the market of a product produced by the Companies (Market). Operator defines maximum and minimum levels of each Characteristic on the Market basing on the research of this Market: $M = \left\{\underline{LR_1} : \overline{LR_1}, \ldots, \underline{LR_k} : \overline{LR_k}, \ldots, \underline{LR_r} : \overline{LR_r}\right\}$ – Market. LR_k – level of a particular characteristic, $\underline{LR_k}$ – minimum level of a particular Characteristic on the Market, $\overline{LR_k}$ – maximum level of a particular Characteristic on the Market

After the Market is described, Operator starts to distinguish particular groups of Companies on the Market. That process is made in the following way:

1 Operator divides the market with the help of cauterization. As a result he distinguishes a set of groups: $G = \{G_1, \ldots, G_j, \ldots, G_g\}$ – set of Groups, g – number of Groups, G_j – a particular Group;
2 Operator defines border Levels of each Characteristic k for each particular group: ; $\underline{LR_k^j}$ – minimum level of a particular Characteristic k in a particular group, $\overline{LR_k^j}$ – maximum level of a particular Characteristic k in a particular group;
3 As a result each particular group j out of a set of Groups can be described in the following way: $G_j = \left\{\underline{LR_1^j}:\overline{LR_1^j}, \ldots, \underline{LR_k^j}:\overline{LR_k^j}, ..., \underline{LR_r^j}:\overline{LR_r^j}\right\}$.

Each Company i on the Market can refer itself to one of the groups. It makes its choice basing on its own perception of Levels of Characteristics of its own product. $LR_k(i)$ – perceptional level of a particular Characteristic k by the current Company

i. As a result each Company can make its own Characteristic profile of its product (Profile). $CP_i = \{LR_1(i), LR_k(i), \ldots, LR_r(i)\}$ – profile made by a current Company i.

Operator announces that on the base of each group j there can be formed only one coalition S_j. To enter a particular coalition j Company has to pay an entrance fee. Operator defines amount of entrance fee for each particular group j, $AS_j > 0$, basing on the analysis of the Market.

After groups are defined, operator offers each participant to decide, to which group he refers himself. Each Company i makes its choice basing on its own perception of characteristics of their product.

Finally Operator announces the expected level of average lead price reduction PR from the perspective of individual investments AS_j of one particular member of coalition S_j for each coalition formed on base of a particular group j at different levels of coalition advertising budget.

$$PR_j\left(X_{S_j}\right) = \frac{X_{S_j} - AS_j}{M(X_{S_j})}, \tag{1}$$

where $X_{S_j} > 0$ – advertising budget of a particular coalition S_j,

$$X_{S_j} = AS_j * d_j, \tag{2}$$

$d_j > 0$ – number of members of a particular coalition S_j.

Function $M(X_{S_j}) > 0$, describes a relationship between the amount of investments in advertising company and the number of leads that come from this advertising company. This function can be derived by many ways, one of which (but not unique) is a regression analysis. It depends on:

- Target audience of a coalition;
- Advertising instruments, used by coalition;
- Season, when advertising campaign is held.

Each additional participant that joins coalition j decreases PR_j. That means, that if there would be no competition increase, connected with the growth of the member of coalition members, it would be a wise strategy for Companies, to form maximum coalition, that could maximise the reduction of price of one lead for its members.

Operator uses PR_j as an additional motivation for Companies to enter one of coalitions. Basing on the researches of trust building among companies, there are some grounds to suggest that organisations make their choice whether they trust or no, mainly basing on estimations made with the help of calculations (Faulkner, 2000; Lewicki and Bunker, 1996). Level of average lead price reduction from the perspective of individual investments of one particular member of coalition PR_j is the instrument aimed to satisfy trust-building calculations criteria.

After all important information was announced, Companies decide, whether they want to join one of coalitions formed on the base of groups. If there are no Companies that join some particular coalition, than this coalition is not formed.

9. Possible strategies of companies

It is important to understand that each Company i has a right to join a coalition that bases on a group with , which does not meet characteristics of this participant. However, such strategy can reduce the number of leads converted to orders by this particular Company, because Levels of Characteristics of its services may not meet expectations of potential customers that can be gathered by a coalition, that Company joined.

From the perspective of the whole industry LGIPBC implies a set of possible strategies that could be chosen by Companies. At first each Company should decide if it wants to join a coalition or no. That means that company has to options:

- To join a coalition (Join);
- Not to join a coalition (Avoid).

If Company i chooses to join one of coalitions, then it has to decide, whether it joins a group with a product, which characteristics levels are similar to characteristics of a product of this company (basing on its own perception), or to join another group. As a result we get the following options:

- To join a group of equals (peer group);
- To join a group with a higher characteristics levels (higher group);
- To join a group with a lower characteristics levels (lower group).

Finally, when Company decides to join a coalition and chooses which exact coalition it chooses, it should make a choice whether it invests its advertising money only into promotion of the web-page of his coalition, or part of its budget goes to advertising of its own web-site. This choice could be described in two options:

- To invest only into promotion of a coalitional web-page (all in coalition move)
- To distribute advertising budget among its own web-site and coalitional web-page (distribution move)

As a result we get the following tree of seven possible strategies (see Fig. 1).

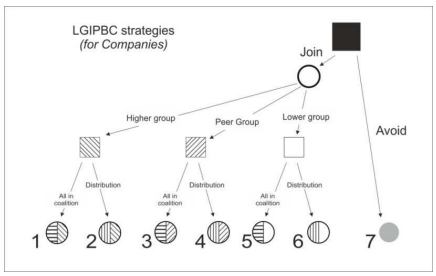

Fig. 1. Possible LGIPBC strategies for Companies.

Depending, on LGIPBC strategy that Company makes it can potentially get different results. All these strategies are examined in mathematical simulation, described in fourth chapter.

10. Profit and ROAS – individual and coalitional

After coalition is formed, Operator starts an advertising campaign with a budget X_{S_j}, gathered from all entrance fees, paid by members of a coalition S_j. Each coalition gets its web-page that is located on the platform. This page gives a potential customer, to get an understanding, which companies entered each particular coalition, to decide, weather they are ready to send a request for services on the platform (for this coalition) or no.

When potential client leaves a request for services, each member of the coalition gets this request. At this moment of time, members of a coalition start competing for this particular lead, to convert this lead into a contract. This is the moment, when the LGIPBC starts to be competitive.

When advertising budget of a particular coalition ends up, and a flow of leads stops, there starts a process of evaluation of effectiveness of a LGIPBC session for each coalition and its participants.

In terms of current research effectiveness of each LGIPBC session is evaluated through two values: Profit and ROAS.

Evaluating profit $V(S_j)$, of a coalition S_j we take into account a total sum of investments that were spent on advertising campaign, and total income, from all sales, made by all members of a coalition, while an advertising campaign of this coalition was active.

$$V(S_j) = I_{S_j} - X_{S_j} \tag{3}$$

$V(S_j)$ – profit of a particular coalition S_j,

$X_{S_j} > 0$ – advertising budget of a particular coalition S_j,

$I_{S_j} \geq 0$ – total income, that one coalition S_j managed to get at the end LGIPBC session

$$I_{S_j} = \sum I_i^j, \tag{4}$$

where $I_i^j \geq 0$ – individual income, that one member of one particular coalition S_j managed to get at the end of a LGIPBC session.

It can be concluded, that each member i of a coalition S_j can evaluate only their own personal profits $V_i(j)$:

$$V_i(j) = I_i^j - AS_j \tag{5}$$

On the base of personal profit there is a possibility to calculate the return on advertising spends (ROAS) of each member of a coalition S_j:

$$ROAS_i(j) = I_i^j / AS_j \tag{6}$$

where $ROAS_i(j)$ – means the return on advertising spends of a current member of a particular coalition S_j;

Finally to evaluate the effectiveness of money spend on advertising campaign of a particular coalition S_j ROAS of each particular coalition should be calculated:

$$ROAS_{S_j} = I_{S_j} / X_{S_j} \tag{7}$$

Profit of each member cannot be announced or predicted before a LGIPBC session is not finished. These values depend on a number of factors including:

- Quality perception of clients;
- Current market trends;
- Economic situation in a country.

In terms of this research, there is an attempt to simulate client's behaviour to try to predict possible profits and evaluable potential successful strategies, that could maximise profits of coalition and each its participant.

11. Model mechanics description

To estimate potential effectiveness of LGIPBC, there was used a simulation of an agent-based model. In current part there is a description of the model, used to run the simulation, its environment, behavior and parameters of its agents;

1 The model simulates market of companies that distribute only one product (Companies) with one possible coalition on this market $g = 1$ ($S_1 =$ Coalition);
2 There is one company ($i = 1$) all parameters of which are manually settable values (the Observed Company);
3 Number of Companies, which operate on the market $n \geq 0$ is a manually settable value, $N = \{1, \ldots, i, \ldots, n\}$ – set of Companies, $i \in N$ – current Company;
4 Number of clients on the market $nl \geq 0$, is a manually settable value, $nl \in NL$, $NL = \{1, \ldots, l, \ldots, nl\}$; NL – set of clients, $l \in NL$ – current client;
5 Number of companies that gather into Coalition $d_1 > 0$ is a manually settable value;
6 The value of coalition entrance fee $AS_1 > 0$ is a manually settable value;
7 The coalition gets its total advertising budget X_{S_1} is calculated according to (2);
8 Each Company (Coalition) chooses its own advertising budget $AB_i \geq 0$ for each period of time. In terms of the simulation, this budget is assigned on the basis of uniform distribution and falls into the range with settable borders, where $\overline{AB}$ is a maximum advertising budget and $\underline{AB}$ is a minimum one for the Market;
9 Each member of the Coalition has an advertising budget $AB_i \geq AS_1$. If $AB_i = AS_1$, than it means that a particular member of the Coalition invests only into the co-invested advertising campaign, and does not invest into advertising campaign of his own web-page. If $AB_i > AS_1$, than it means that a particular member of the Coalition invests money into advertising campaign of the web-page of the Coalition and also he invests into advertising campaign of his own web-page;
10 Each Company i gets its quality level q_i – an integer value that is randomly assigned on the basis of uniform distribution out of $Q = \{\underline{q} : \overline{q}\}$ – set of quality levels, $q_i \in Q$.
11 Each quality level q gets its middle price of a quality level ($MPQL(q)$);
12 When company i gets a particular level of quality, it also gets its price p_i, which is randomly assigned on the basis of uniform distribution and falls into the range:

$$p_i \in [MPQL(q) - \varepsilon * MPQL(q);\ MPQL(q) + \omega * MPQL(q)] \qquad (8)$$

where ε and ω fall into a range from 0 to $\gamma \geq 0$ is a manually settable value. $\varepsilon \in [0; \gamma]$, and $\omega \in [0; \gamma]$ are randomly assigned on the basis of uniform distribution.

There can be calculated maximum and minimum possible prices on the Market. Minimum possible price on the Market: $\underline{p} = MPQL(\underline{q}) - \gamma * MPQL(\underline{q})$, while maximum possible price on the Market can be calculated in the following way: $\overline{p} = MPQL(\overline{q}) + \gamma * MPQL(\overline{q})$;

13 Each Company has its own web-page;

14 The Coalition has its own web-page;

15 Each Company (Coalition) uses pay-per click (PPC) advertising as an advertising instrument, when advertisers pay a pay-per click cost ($PPCC \geq 0$), each time, when their advertisements are clicked;

16 PPC advertising is the only way of promotion on the market;

17 When potential client gets on the web-page that belongs to a particular Company (Coalition), that means that this potential client has clicked on the advertisement of this Company (Coalition), advertising budget of this Company (Coalition) reduces on $PPCC$, of this Company (Coalition);

18 There are four $PPCC$ rates, which are manually settable values;

19 In terms of simulation $PPCC$ is assigned to each Company on the basis of uniform distribution between the set of possible options. That simulates the choice, which each Company makes concerning, $PPCC$ rate that it uses;

20 $PPCC$ of the Coalition is a manually settable value;

21 Particular $PPCC$ defines the probability, that potential client will click on the advertisement of a Company that was assigned with a particular $PPCC$. That probability is called a click-through rate ($CTR > 0$);

22 Each Company starts its advertising campaign at a random period of time in terms of manually settable borders;

23 Coalition and Observed Company start their advertising campaigns from the beginning of the simulation;

24 Conversion rate ($CVR \geq 0$) defines a probability that a particular client, who has entered a web-page of a particular Company (Coalition), makes a request on its services. Each Company gets its CVR_i out of the CVR range according to the triangular distribution, where $\underline{CVR}$ – minimum possible CVR (manually settable value), $\overline{CVR}$ – maximum possible CVR (manually settable value), and CVR^m – the most possible (manually settable value);

25 CVR_{S_1} of the web-page of the coalition is a manually settable value;

26 When a particular client leaves a request on a web-page of a particular company, this company gets a status of "Potential contractor" of this client;

27 If a particular client leaves a request on a web-page of the Coalition, all members of the Coalition gets a status of "Potential contractor" of this client;

28 Each client l has his desired number of requests $NO_l > 0$, which he leaves on web-pages. NO_l is randomly assigned on the basis of uniform distribution to each client and falls into the range with a manually settable borders;

29 If client leaves a request on a web-page of a Company (Coalition) but he did not get his desired number of requests, he continues to visit web-sites of other Companies (but never gets back on the web-page, on which he left his request);

30 If client leaves a request on a web-page of a Company (Coalition) and gets his desired number of requests, he stopes to visit other web-pages;

31 After client stops to visit web-pages, he has to make a choice and pick one Contractor out his set of Potential Contractors;

32 Potential client behaviour description:

(a) Each potential client gets his own subjective level of quality of each Potential Contractor $q_l(i) \geq 0$,

$$q_l(i) \in \begin{cases} [q_i - q_i * \alpha;\ q_i + q_i * \beta], & (q_i - q_i * \alpha) > 0, \\ [0;\ q_i + q_i * \beta], & (q_i - q_i * \alpha) \leq 0, \end{cases} \tag{9}$$

where α and β fall into a range from 0 to τ, where τ is a manually settable value. Here $\alpha \in [0; \tau]$, and $\beta \in [0; \tau]$, where α and β are randomly assigned on the basis of uniform distribution

(b) Every client l has his quality perception level θ_l, which falls into the quality perception level range of the Market: $\theta_l = [\underline{\theta}; \overline{\theta}]$, where $\underline{\theta} = \underline{p}/\underline{q}$, and $\overline{\theta} = \overline{p}/\overline{s}$;

(c) Every client tries to maximise his subjective utility that a potential client gets from a particular company for its price U_l

$$U_l(p_i, \theta_l, q_l(i)) = \begin{cases} \theta_l * q_l(i) - p_n, & \theta_l * q_l(i) > p_i, \\ 0, & \theta_l * q_l(i) \leq p_i. \end{cases} \tag{10}$$

As a result, if a potential client chooses between 5 organisations (potential contractors), he always gives his choice to the company that provides him with the maximum subjective utility;

33 To simulate different market environments and various individual strategies current model includes a set of manually settable scenarios:

(a) There is a coalition on the market. Advertising budget of each organisation that entered a coalition can be higher than a coalitional entrance fee (companies invest into coalitional web-page and into their own web-sites),

$$AB_i \geq AS_1.$$

(b) The observed company enters the coalition; however its advertising budget is equal to the entrance fee of the coalition.

$$AB_1 = AS_1;$$

34 The quality level: of the observed company, which defines its personal quality move, is manually settable:

(a) If the Observed Company gets manually set $q_1 = 2$, than the Observed Company has chosen "higher group move";

(b) If the Observed Company gets manually set $q_1 = 3$, than the Observed Company has chosen "peer group move";

(c) If the Observed Company gets manually set $q_1 = 4$, than the Observed Company has chosen "lower group move";

35 To evaluate the effectiveness of different strategies there is a need for calculation of profit and ROAS of Company (Coalition);

(a) ROAS of Company 1 is calculated in the following way: $ROAS_1 = I_1/AB_1$ where $ROAS_1$ – return on advertising spends of Company 1, $I_1 \geq 0$ – income of Company 1;

(b) ROAS of the Coalition S_1 is calculated in the following way: $ROAS_{s_1} = I_{s_1}/X_{s_1}$ where $ROAS_{s_1}$ - return on advertising spends of the Coalition, $I_{s_1} \geq 0$ – income of the Coalition;

(c) Profit of a Company 1 is calculated in the following way: $V_1 = I_1 - AB_1$;

(d) Profit of the Coalition S_1 is calculated in the following way: $V_{s_1} = I_{s_1} - AS_1$;

12. Parameters for the simulation

To run the simulation of the LGIPBC model, it was decided to use data from some particular market. Through this, results of the simulation could be closer to reality. Also that could ease the process of interpretation and analysis of results.

It was decided to use web-design market as a base for LGIPBC model basing on the following criteria:

1 Design of new web sites has an approximate 85% share in the structure of the income of an average Russian web-design studio. That could be a base for a statement that there is a market for the product (design of a new web-site), and web-design studios potentially have enough motivation to attract clients through advertising activities.
2 Respond to the question "From which sources you company gets new clients", which provided respondents (CEOs of the companies) with multiple choice demonstrated the following tendencies:
3 From 80 to 90% of all Russian web design studios get their clients through a personal recommendations
4 More than 60% of new clients came with the web design studio link, disposed on its previous projects
5 At least 30% of all new clients found these companies with a search engines (Google, yahoo and etc.)
6 From 16% to 21% of new clients came from the PPC advertising (Yandex direct and Google Adwords)
7 From 17% to 27% of new clients came from thematic portals and different platforms, that help companies to get clients (such as Avito.ru)

At the same time approximately 45% of all web design studios planned to spend the most part of their advertising budget on PPC advertising. Basing on this data there could be made a conclusion that PPC advertising (the only advertising activity used in model) is used by web-design market and characteristics this market could be used as a parameters for the simulation model.

To define the range of possible advertising budgets it was decided to apply one of approaches of advertising budget identification through a turnover of a company. According to one of these approaches, company should use some percentage from its turnover for some period of time, as an advertising budget for the next period of time. That means that to define potential borders of advertising range, it is needed to know average turnover of web-design studios and which average share of this turnover could be used by them as an advertising budget.

In 2011 Russian web design market faced a significant growth, with approximately 53% growth, comparing to the previous year and reached 14.9 billion rubbles volume. With the growth of the market, web design studios faced a significant increase in their turnover levels demonstrating 11.9 million rubbles average annual turnover in 2011 - 34% growth comparing with 2011 (see Fig. 2).

Distribution of total annual turnover among companies operating in different regions of Russian Federation looks in the following way:

1 Central Federal District - 17 881 077 rubbles
2 Northwestern Federal District - 12 645 474 rubbles
3 Ural Federal District - 11 965 143 rubbles

4 Siberian Federal District- 5 287 525 rubbles
5 Volga Federal District - 4 540 238 rubbles
6 Southern Federal District - 1 390 925 rubbles
7 Far Eastern Federal District - 1 240 000 rubbles

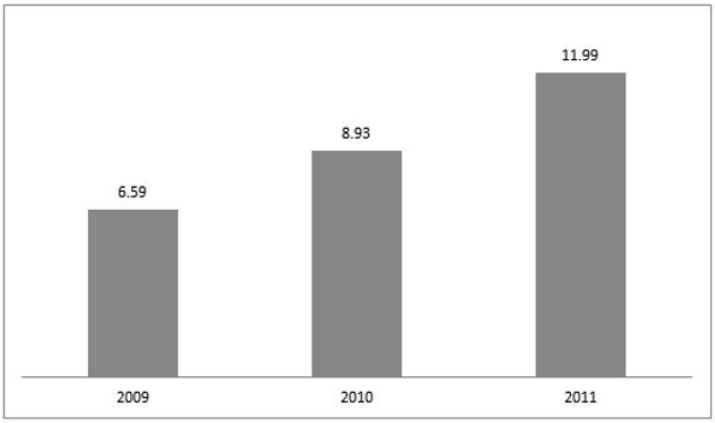

Fig. 2. Average annual turnover of Russian web design studio (million rubbles) (CMS magazine, 2012).

According to Chief Marketing Officer survey 2016, Average advertising budgets of companies that offer services in B2B sphere falls around 8,6% from the total revenue of a company. That brings us to the conclusion that average advertising budget of a web design studio is approximately 85,000 rubbles per month. It is decided to use this amount as an advertising budget of the observed company as the most expected one ($AB_1 = 85,000$). The top border of advertising budget range ($\overline{AB}$) is set on level of average monthly advertising budget of the Central Federal District – 128,000 rubbles.

Number of Companies (n) on the Market, there was made basing on the web-design market segmentation by the price criteria. In 2012 there was approximately 2,600 web design studios operation on the Russian market. Price diversification among Russian web design studios is pretty wide. Prices of organisations that operate in low-cost segment start with 5,000 rubbles and end up with companies that produce web-sites for prices that start from 2 million Rubbles. In the research that describes the web-design market, the most part of web design companies that operate on Russian market were distributed to 7 main price categories (price of an average web-site for an organisation):

1 Less than 50,000 rubbles (35.9%)
2 From 50,000 to 100,000 rubbles (31.5%)
3 From 100,000 to 200,000 rubbles (18%)
4 From 200,000 to 300,000 rubbles (8.8%)
5 From 300,000 to 500,000 rubbles (2.8%)
6 From 500,000 to 700,000 rubbles (1.6%)
7 Above 700,000 rubbles (1.6%)

Basing on the analysis it was decided to form groups basing of their pricing policy of organisations. It was decided to reduce the number of groups from 7 to 3 (see Table 1).

Table 1. Grouping of companies on a price basis

Price category	**Price range**	**Percentage of participants**	**Estimated number of participants**
1	Less than 50,000 rubbles	35.9%	933.4
2	From 50,000 to 200,000 rubbles	49.5%	1287
3	Above 200,000 rubbles	11.5%	379.6

One of the main motivations to unite all companies with prices above 200,000 in one group, was the assumption that clients, which can afford themselves a web-site for 500,000 rubbles, do not use PPC instruments to look for a contractor as often, as those, who look for a cheap or middle-priced products. That means that leaving categories with high prices as separate ones could make them unpopular among companies.

The second and third price categories were united in one common group, to make representatives of this group to be the most numerous group of companies, which could represent approximately half of the market.

In terms of current simulation it was decided to use second group as a total market ($n = 1287$), because it has a clear price borders that could be used as a price borders of the model: $\overline{p} = 50,000$, $\underline{p} = 200,000$.

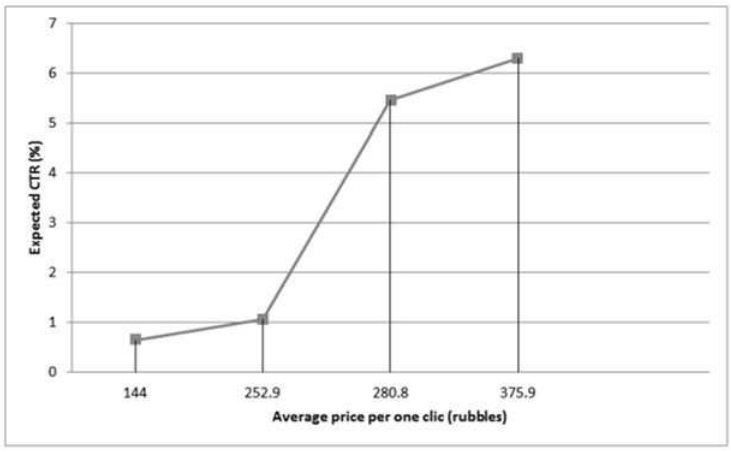

Fig. 3. CTR (%) dependence on the average price of one click (Yandex, April 2016).

One of the forms of PPC advertising is a PPC advertising based on the platform of search engines. When people search some word or phrase using one of search engines, they get PPC advertisements in special fields of a page with a search results. According to the data collected by Yandex company (Russian search engine), which provides Russian business with the PPC advertising services, in April 2016 PPC

campaign built on one search phrase "To order a web-site" would have the following terms and characteristics (on 30 days scale):

Average number of ad showings – 66,630

Click-through rate (CTR) – varies from 0,64% to 6,31% depending on the rate (average price of one click), that organisation chooses for its promotion (see Fig. 3).

Basing on this data, the maximum number of potential clients that visit a web-site of one particular studio can reach the number - 4205 visitors, that number is used to define the number of clients on the simulated Market ($l = 4205$). Estimated budget, needed to get such number of visitor is above 1 242 000 rubbles.

In terms of the current simulation average price per one click rates are used as PPCC rates (see Table 2):

Table 2. PPC advertising instrument costs and CTR (Yandex, April 2016)

PPC advertising instrument				
Price per one click (PPCC)	144	253	280	376
CTR	0.64%	1.05%	5.46%	6.31%

Table 3. Conversion rates of web-sites in different industries (Kim, 2014)

Distribution Point	All accounts	Ecommerce	Legal	B2B	Finance
Median CVR	2.35%	1.84%	2.07%	2.23%	5.01%
Top 25% CVR	5.31%	3.71%	4.12%	4.31%	11.19%
Top 10% CVR	11.45%	6.25%	6.46%	11.70%	24.48%

Finally it is important to estimate, how many visitors of web design studios web-sites convert to actual leads leaving their request for web-site development services. According to "WordStream" company data (see Table 3) median conversion rate of the Internet resources is around 2.23% (B2B service), which means that approximately only 2 out of 100 visitors of a web-site of a web-studio convert into leads (Kim 2014). That means that even if company pays minimum price per one click on its ad in PPC campaign (144 rubbles), one lead costs it approximately 7,200 rubbles.

13. The simulation results and analysis

In terms of current research there were made more than 300 simulation rounds. Basing on the data, received from these simulation round there can be made some conclusions and suggestions. The values of all parameters of the simulation were

taken from the analysis of the processes and trends that take place in the web-design industry.

To answer the second sub question of the current research (What is the possible impact of a lead generating coopetition on companies with different price and quality strategies?) author runs a series of tests with the observed company. The aim of these tests it to detect the best scenario (from the perspective of profit and effectiveness) for different combinations of price and quality of the services provided by the observed company. Criteria of effectiveness is evaluated through ROAS.

As a result, there were created profiles that demonstrate different levels of profit and ROAS at different scenarios (see Table 4). The main aim of these profiles is to help to define the best scenarios from perspectives of ROAS and profit.

Table 4. RAOS and profit profile of observed company with high quality and low price

Price on services of the observed company:	Scenario	**1**	**2**	**3**	**4**	**5**	**6**
50,000	**ROAS**	1.412429	61.904	0.58851	9.18338	10.0047	28.5714
	Profit	35040	127900	-34960	695064	744040	579000
	The strategy(s) with the highest profit	2					
	The strategy(s) with the highest ROAS	2					
	The strategy(s) with the lowest profit	3					
	The strategy(s) with the lowest ROAS	3					

When profit of the observed company is used as an effectiveness criteria, outcomes of simulations demonstrate that in most cases companies benefit from Scenario 4 and Scenario 2 (see Fig. 4).

The only category of companies that did not benefit from a coalition presence on the market is companies with low quality and high or upper-average prices. Basing on this data there could be made an assumption that presence of a LGIPBC has an impact on profits of companies of a particular industry. In addition to that there is a base to suppose that this impact could be classified as positive.

In cases when ROAS is taken as main effectiveness criteria, simulation demonstrates pretty close results (see Fig. 5). The only significant difference is that there also appears Scenario 6 as a potential effective scenario for organisations that have low costs and high or low quality of services. ROAS perspective also demonstrates that companies with high or upper-average prices and low quality benefit from situations, when there is no LGIPBC on the market. All other participants get an increase of ROAS when LGIPBC is working and they take part in coopetition.

Although, in both effectiveness tests Scenario 2 seems to be not a realistic one, because it seems to be impossible, that all members of the Coalition refuse to invest their money into their own web-site. However simulation results demonstrate that organisations with high quality/high and upper-average price combination and Companies with medium quality/low and lower-average price get the best results

from such scenario. That also could be used as a base for the assumption that LGIPBC increases the transparency on the market, making its clients to find Contractors, which suit their needs the most.

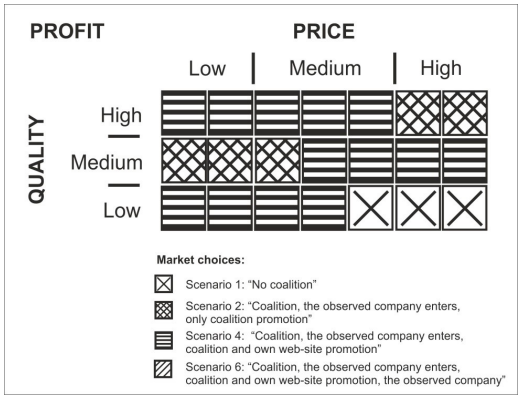

Fig. 4. Best individual scenarios from the perspective of profit.

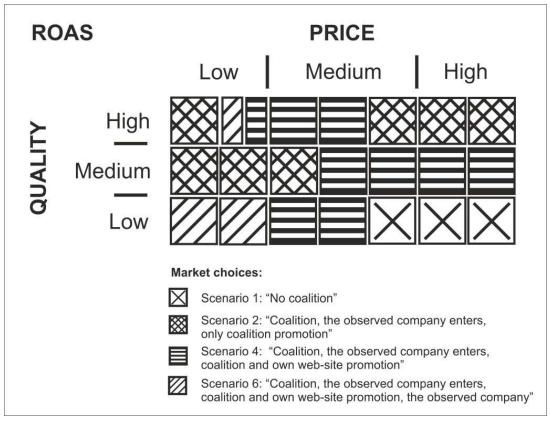

Fig. 5. Best individual scenarios from the perspective of ROAS.

The third important assumption that can be made basing on the ROAS tests is the idea, that Scenario 6 of LGIPBC could be effective for companies with a low price policy. It means that companies with a low-price policy can afford themselves not to invest into their own advertising campaigns, but use only the coalition, as the only source of leads, that they get. Basing on this assumption there could be also made an additional assumption, that there is a probability, that LGIPBC has a potential to decrease average prices in one particular industry.

According to the abovementioned tests results there is a sufficient basis to state that LGIPBC has a positive impact on industry, and can increase profits and effectiveness of advertising campaigns of its participants (except those who have high or upper-average prices and low quality).

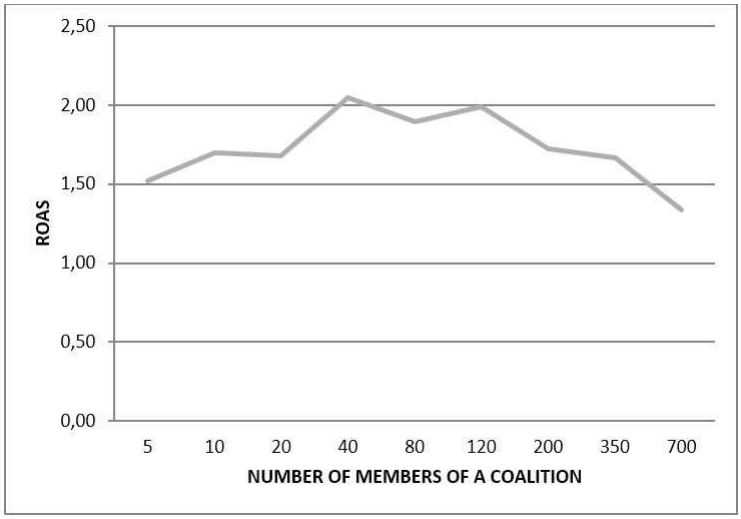

Fig. 6. Dependence of ROAS of the coalition on the number of members of the coalition.

The next set of simulation tests was made to answer the third sub-question (How number of the coopetition process participants influences on effectiveness of lead generating coopetition?). Using ROAS as criteria of effectiveness author gets outputs, which could be used a base for the conclusion that answers the third sub-question of current research: Number of members of the coalition has an impact on the ROAS of the coalition (see Fig. 6).

There could be observed a clear increase of ROAS until the number of members of a coalition reaches some particular level. After this level there is another clear trend that demonstrates the decrease of ROAS of the coalition.

One of the possible reasons for such trend could be that average income of coalition starts to decrease, when the number of participants grows. Growth of the number of participants could cause the transparency increase and decrease of the prices as a result. In other words client see, who has the same quality but lower price, and buy from them.

The second test submits the assumption, that LGIPBC has a potential for the increase a transparency of a particular market, however, from the standpoint of author, this assumption should be checked in a more precise way.

Finally there were made tests that aimed to define if c appearance on the market and growth of number of its members can potentially increase average utility of one client on the market. As a result there was detected a following tendency (see Fig. 7).

Basing on the results of utility tests we can assume that increase of the number of members of a coalition that bases on the LGIPBC (and its existence) have a potential to increase average utility on the market. As a result, level of satisfaction of an average client can increase significantly.

That phenomenon detected in terms of simulation can be explained with an assumption that increase of number of member of a coalition gives a client a chance

to compare more offers at once and define the best one (from subjective position of a client)

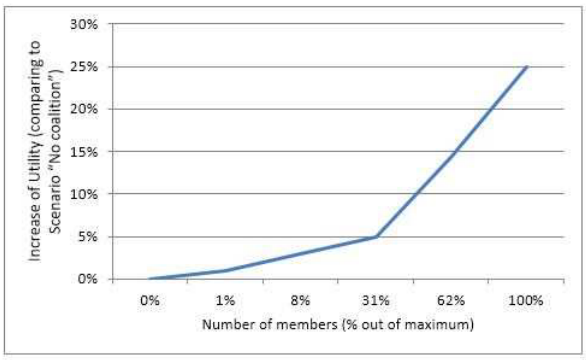

Fig. 7. Dependence of average utility of a client from number of members.

This potential benefit that market can get from LGIPBC applying also could be used as a ground for the assumption that LGIPBC can become a source of market transparency significant growth, which means an increase of competition among companies and all outcomes that derive from that.

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