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COMPANIES AND CUSTOMERS INTERACTIONS: CO–CREATION, CUSTOMER ENGAGEMENT AND COMPANIES' MARKET ORIENTATION

Model for Evaluation of Co–creation Possibilities in the Enterprise of Knowledge – Intensive Business Services

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Abstract

Increasingly growing globalisation in business creates new challenges for enterprises, for instance, stronger competition, changing structure of the branch of business, new technologies and markets emerging, etc. Changing conditions demand new solutions that could improve the way enterprises perform and create innovation generating miscellaneous value. Co–creation is a unique way for a joint creation of knowledge and innovation between the entities involved that helps take into account specific needs of clients, improves productivity, growth potential of enterprises, etc. Scientific literature emphasizes the usefulness of co-creation, but the risk that comes together with it should be noted too. It is related to uncertainty that makes the estimation of probability of future events and their importance to the enterprise problematic. Therefore, it is necessary to have an effective method to evaluate the opportunities of co–creation that may emerge between an enterprise of knowledge intensive business services (KIBS) and its clients and to see potential threats.

***Keywords*: co–creation, knowledge intensive business services, modelling, fuzzy logic.**

Introduction

Changes in the market and increasing competition encourage enterprises to look for solutions that would make it possible to survive and succeed in the market. In this case it is necessary to create, update, and use the knowledge that could help achieve this goal. Organizations that pay significant attention to knowledge management are much more likely to succeed in the environment that changes quickly (Staliuniene and Stungriene, 2007). However, enterprises often lack the required knowledge, skills, human and technological resources, etc. (Bagdoniene, Kazakeviciute and Zilione, 2011). So, in order for an enterprise to stay effective in the market, it is more important to concentrate on its main activities and special services and competencies outsource from other specialists. Those specialists use their knowledge, information, competencies, experience, and technologies to solve business problems of their clients. The use of such knowledge intensive business services (KIBS) becomes more and more common (Bagdoniene, Kazakeviciute and Zilione, 2011).

Knowledge intensive business services, including the information technology based ones, are a constantly growing subsector of services that are being recently researched all over the world. According to the object and the volume of the research, three major groups can be identified: 1) macro problems and the KIBS input into the knowledge economy (Skogli, 1998; Simmie and Strambach, 2006); 2) KIBS role in solving the problems on a mezzo level (such issues as regional competitiveness (Haataja, 2005), sub-sectorial innovativeness (Wong and He, 2005; Freel, 2006), etc.); 3) challenges arising on a micro level to be solved by KIBS enterprises or in a dialogue with clients. Having said that it is worth mentioning that, in the process of KIBS, a client is seen as an active contributor. The importance of the client input into the KIBS provision process is being stressed by many researchers, e.g., Hipp (1999), Bettencourt et al. (2002), Aslesen and Isaksen (2007), Castaldi et al. (2010) who acknowledge client's role in the creation of knowledge and innovations. According to Aarikka–Stenroos and Jaakkola (2012), during the process of solving business problems clients become co–creators. So, clients' possessed knowledge, skills, the acquisition of experience, and their application in solving business problems become one of the actualities in the activity of KIBS enterprises (Bakanove, 2013). When co–creation between a KIBS enterprise and a client emerges, it allows to create better solutions for a business problem, to decrease expenditure for the development of the solution, to shorten the time spent, to increase client's satisfaction and acceptance, etc.

(Bakanove, 2013). However, co–creation may lead to disadvantageous results (Ple and Caceres, 2010) but the research addressing these issues is at an early stage and it is difficult to understand the reasons of disadvantageous co–creation. Ramaswamy and Gouillart (2010) say that enterprises lacking competence for co–creating with clients. Having the knowledge and skills needed in order to evaluate if the co–creation initiative is going to be promising would help the enterprise make the right decision saving the resources of all stakeholders involved in the co–creation process. So, the *research problem* of the article is as follows: how to evaluate the opportunities of co–creation so that enterprises are able to achieve positive results?

The aim of the article is to propose a model for the evaluation of co–creation possibilities with the emphasis on the context of knowledge–intensive business services.

The methods used for implementing the research are: literature analysis; case study based on quantitative (survey) and qualitative (focus group interview) data collection instruments; data analysis implemented using Hillson's SWOT analysis, and Fuzzy Cognitive Maps.

When addressing the research problem, first of all, the phenomenon of knowledge–intensive business services is discussed; co–creation as a feature of these services is presented; the need for evaluating co–creation possibilities is stressed and the methods are presented. Secondly, the argumentation of the research methodology is introduced. Thirdly, research results with the main findings are presented. Finally, concluding ideas summarize the main results and disclose the research problem raised.

The phenomenon of Knowledge–intensive business services

In order to understand the essence of KIBS it is important to note that they are often considered equivalent to knowledge–intensive services (KIS). However, according to Gotsch and Hipp (2011), a knowledge–intensive business service provider supports business processes of other enterprises (private and public), while knowledge–intensive services are provided for end customers. Knowledge–intensive services have such features as knowledge intensity, relative capital intensity and high level of specialization (for example, medical care services). While KIBS can be described as the ones that are oriented to process, requiring a relatively long contact, are adapted to individual needs of the client, based on advisory activities and focused to problem–solving, followed by qualified professional knowledge and provided by highly qualified personnel (Rakickaite and Vaitkiene, 2009). Castro, Lopez, and Verde (2011) emphasize that KIBS providers 'are the mediating enterprises that specialize in the selection, evaluation, analysis of knowledge and professional consulting'.

All competences of knowledge intensive business services are directed to providing knowledge intensive products for the business processes of enterprises (including both private and public sectors). However, the main competence of those services lies in the *ability to unite* a 'new unique structure of knowledge', including scientific, technical, and implicit knowledge that can solve the problems of other enterprises. Also, these services feature 'the *transmission* of knowledge and skills to the clients' that is mostly based on the professional knowledge (Amara, Landry and Doloreux, 2009). Musolesi and Huiban (2010) KIBS include an*intensive use* of advanced technologies, specialized skills and professional knowledge. They also have such features as '*exclusive applicability*, *risk*, and *uncertainty*' that are hard to evaluate (Javalgi et al., 2011).

It is also important to note that the sector of KIBS is characterized not only by the 'intensity of knowledge use'. This sector is seen as *fast growing* when compared with other sectors, having *unique market relations*, high degree *professionalism*, *self–regulation*, *special ways of value–creation* (participation in innovation and knowledge generation together with client) (Dobrai and Farkas, 2009). Rakickaite and Vaitkiene (2009) emphasize that KIBS have 'a *high degree of interaction* between an enterprise and a client'. In this case, the specific knowledge of experts and specialists is integrated into the process of creation and dissemination of new knowledge, while maintaining *long–term relationships* (Bagdoniene and Kazakeviciute, 2009).

These characteristics alone make it impossible to demonstrate the diversity of knowledge intensive business services. KIBS are a subgroup of business services that can be divided into two parts:

1. Traditional professional services, for example, advertising, marketing.
2. Knowledge intensive business services based on new technologies, for example, design, engineering, or computer related services (Corrocher, Cusmano, and Morrison, 2009; Huggins and Weir, 2012).

According to Javalgi et al. (2011), in the first case, the services are based on social and institutional knowledge. In the second case, the services are based on technical knowledge. In both cases the enterprises that provide KIBS give knowledge-based products or use knowledge to help the client generate and process the knowledge. Thus KIBS include computer services, research and development, legal services, accounting and management services, architectural, engineering and technical services, market research (Huggins and Weir, 2012). Generally speaking, these services are based on intellectual, philosophical, methodical, technical, procedural knowledge (Bagdoniene, Kunigeliene, and Jakstaite, 2007) and help enterprises reorganize the business processes, create new products, decrease the costs, improve the quality, find new markets, etc. (Bagdoniene and Kazakeviciute, 2009). Knowledge intensive business services function as intermediaries (Hertog, 2000), create the conditions for the learning process, knowledge sharing, give the access to the existing knowledge while creating new knowledge, help keep the competitiveness, act as brokers of knowledge and information, identify, and solve the problems of the clients and act as the source of innovation (Bagdoniene and Kazakeviciute, 2009).

Taking these functions into account it can be said that knowledge intensive business services require the participation of the client, creating not just short–term, but also long–term value (Vaitkiene and Pilibaityte, 2008). Collaboration helps KIBS enterprises understand the needs of the clients and improve the quality of the services. Success chances are also improved by commitment for a common goal, demonstrated dedication, and effective exchange of information. That is understandable and worth encouraging in order to simplify the process of solving problems, to demonstrate the respect to the proposals of the partner and to observe the advancement of the project. This collaboration leads to the changes in knowledge base – not just for the client, but also for the KIBS enterprise (Miles, 2005).

Co–creation as a feature of Knowledge-intensive business services

The latest value creation and innovation literature stresses a growing importance of client involvement when creating and delivering value. According to Miles (2005), the role of the client can be active (demanding to create or provide the service or product in common) or passive (the client only orders the service and pays for it). Prahalad and Ramaswamy (2004) argue that the role of the client has changed. Nowadays a client is well informed, active, and interested in providing an input into the value generation process. According to Service Dominant Logic, the client is always a co–creator of value (Vargo et al., 2008) because value emerges when the service is being used by the client, but he/she also may become a co-creator of service (Gronroos, 2008). This is the case when a client actively participates in creating the service concept, in testing the prototype, etc. According to Bakanove (2013), depending on the nature of KIBS, there might be various roles that the client is choosing during the process. He/she might be a user (passive participation), a source of knowledge or/and a co–worker (active participation with some influence on the end result), a co–creator, or/and a partner (active participation with big influence on the process and the end result).Obviously, not all KIBS call for an active participation of the client. Though, it is more important where the primary result of the service is the change of the state of the client or its behavior. Computer related KIBS that are dedicated to creating new software, designing new IT, supply chain management, manufacturing, data processing and other systems, etc., require active client participation in the process of solving a business problem so that the service provided corresponds to specific needs of the client (Bakanove, 2013). The service provision process of the latter type of KIBS requires close interaction between the companies and so there is a favorable environment for co–creation to emerge (Scarso and Bolisani, 2011). This is particularly common among software companies (O'Hern and Rindfleisch, 2009). And so co–creation bypasses traditional roles of a supplier and a client, when their relationship can be defined by exchange of value (Kuusisto and Paallysaho, 2008).

The definition of co–creation in the context of KIBS is still being refined. Kuusisto and Paallysaho (2008) argue that co–creation is a *process of interaction* between the service provider and client and *dedicated for creating a service* of a high quality. According to Aarikka–Stenroos and Jaakkola (2012), co–creation is a *joint problem solving process* that generates value–in–use and is implemented over collaborative activities. It is believed that co–creation is more than value generation. So, the definition suggested by Bakanove (2013) is followed. The author argues that *co–creation between service provider and a client is a joint process of service creation which is based on the creativity of the partners; it involves the integration of complementary heterogeneous resources, the production of new knowledge and its application in solving a specific and even unique business problem and leads to the result of mutually beneficial value that is hardly foreseen in advance*.

Co–creation has significant advantages. For example, it allows to generate new insights in the enterprise that, in turn, allow to reduce the risk, increase productivity, growth, and return of investment (Frigo, 2010). It also creates long term competitive advantage (or strategic advantage). However, co-creation doesn't succeed all the time. Sometimes such interaction can destroy the value instead of creating it. According to Jaworski and Kohli (2006), under some conditions the enterprise should avoid co–creation with the client because of high probability of mutual failure. This phenomenon is called value co–destruction. It is defined as interaction that results in decrease of welfare of both participants (Ple, Chumpitaz and Angot, 2009). Lefebvre and Ple (2012) explain that it is a result of common indifference between the participants of the business–to–business co–creation, both in direct interaction and in indirect interaction. Value co–destruction can happen when one of the participants abuses its own resources or resources of the partner, either deliberately or accidentally (Ple, Chumpitaz and Angot, 2009). Accidental abuse happens when both sides intend to work together, but their expectations do not match. Deliberate abuse happens when one of the participants tries to be the only one profiting from the interaction (Ple and Caceres, 2010).

It follows that the importance of evaluation of co-creation possibilities becomes obvious because to foresee the end result in advance is very difficult or even in some cases just impossible. Even when the client needs are met, what about the performance of the enterprise? Does the end result effect it's productivity or competitiveness? These are the questions that are open and have to be taken into account before getting into the process of co–creation.

Modeling instruments for evaluation of co–creation possibilities

The process of co–creation between the client and the enterprise can last many months with the end result being hard to predict. Yet the enterprise must evaluate possible opportunities and threats before initiating the relationship. Those opportunities and threats correspond to the risks of

collaboration. Risks as such are unavoidable while trying to develop the organisation. Thus, the ability to identify and manage risk is one of the most important aspects of management function. Evaluation of business risk makes it possible to find solutions concerning changes of the environment, while strengthening the abilities to create value (Karpickaite, 1996).

Thus risk evaluation is one of the main steps. The knowledge received in this step is used for business decisions (risk management). There are various methods and standards for risk evaluation. For example, UK has such standards as IRM, AIRMIC, ALARM, Australia has a standard AS/NZS ISO 31000:2009, USA has a standard COSO (Karpickaite and Sutiene, 2011).

Since one of the tasks is to find out the opportunities and threats, one of useful methods is SWOT (Strengths, Weaknesses, Opportunities, and Threats). SWOT analysis is commonly used in business for various strategic and market research instances. The main goal of SWOT analysis is finding internal and external factors that influence the achievement of the objective (Esquerra, 2010).

Basic SWOT analysis can be adapted for quantitative evaluation (Jasinevicius and Petrauskas, 2011). In such a case, the data can be entered into Hillson's SWOT analysis table (Jasinevicius and Petrauskas, 2011). Such a table lists opportunities and threats in its rows and strengths and weaknesses in its columns. Each opportunity and threat is assigned values describing its certainty and impact, then, estimates of impact of strengths and weaknesses upon them are given in intersections of rows and columns. Finally, total estimates of opportunities and threats can be calculated (Jasinevicius and Petrauskas, 2011).

However, SWOT analysis is not meant for dynamical evaluation, and co–creation does depend on time.

One of the methods to extend SWOT analysis for dynamical modeling uses Fuzzy Cognitive Maps (FCM) that are based on fuzzy logic (Jasinevicius and Petrauskas, 2011). Fuzzy logic is a multivariate logic. It defines continuous values between conventional discrete values like 'true' or 'false' (Hassan and Fahmi, 2005). As, for example, Norkus and Morkevicius (2011) mention, fuzzy logic considers not merely the degree of membership in some set, but the degree of truth of propositions. In classical proposition logic, the proposition can have just one of two truth values: true or false. In fuzzy logic intermediate values can also be used.

Such analysis depends on the opinion of the experts (Jasinevicius and Petrauskas, 2011). It is not a unique feature – in many modelling methods that evaluate risk data is used together with the expert opinion (Franke and Shah, 2003).

Fuzzy Cognitive Maps consist of several interacting entities and relationships between them. These entities can strengthen or weaken each other. Such interactions are often described in a fuzzy way, that is, qualitatively and not quantitatively (Jasinevicius and Petrauskas, 2003).

Both basic fuzzy logic (Bodea and Dascalu, 2009) and Fuzzy Cognitive Maps (Lin, Lin, and Tyan, 2011) have been used for risk evaluation. Having said that and keeping in mind that KIBS provision process as well as co–creation may be risky, the authors suggest the fuzzy cognitive logic as a unique approach for modelling the evaluation of co-creation possibilities.

Research methodology for evaluation of co-creation possibilities

The evaluation of co–creation possibilities has been performed at an IT enterprise, JSC 'Hnit–Baltic'. In order to perform this research both qualitative and quantitative methods have been used:

1. Expert focus groups.
2. Hillson's SWOT analysis table.
3. Fuzzy Cognitive Maps (FCMApp and SwotFcm software packages).
4. Verification of results using a survey of the clients.

At first, two focus group discussions (up to 60 minutes) were performed. 15 respondents participated (7 in one, and 8 in another). This number was chosen because JSC 'Hnit–Baltic' had about 30 employees, but only 15 of them worked with co–creation projects. The goal of focus group discussions was to find out co–creation-related strengths, weaknesses, opportunities, and threats at the enterprise. The results were put into Hillson's table (Table 1).

Hillson's table takes all four components of SWOT analysis into account. Its rows correspond to opportunities and threats, while columns correspond to strengths and weaknesses. Each opportunity and threat is given the degree of certainty or probability (μ) from interval [0; 1] with the estimate of impact (c). The influence of strengths and weaknesses on each opportunity and threat is also given numerical evaluation (Hillson, 2004).

According to Jasinevicius and Petrauskas (2006), the total estimates of opportunities and threats can also be evaluated:


(1)


(2)

Here, no is the number of opportunities, nt – number of threats, c – estimate of importance, μ - estimate of certainty, ST – influence of strengths to opportunities and threats, WK – influence of weaknesses to opportunities and threats.

In order to evaluate the risk, static evaluation is insufficient. However, Hillson's table and fuzzy cognitive map (FCM) based on it can only evaluate a static situation (they have no feedback loops, as they correspond to a directed graph without loops). Thus a modified fuzzy cognitive map with feedback loops would have to be used. However, this FCM is going to be simplified, to make the interpretation of results easier.

Table 1

SWOT matrix for co–creation at JSC 'Hnit-Baltic'

Strengths	**Weaknesses**
• Innovativeness (ST1) • Competences (ST2) • Orientation to clients (ST3) • Loyalty of existing clients (ST4) • Knowledge and resources (ST5) • Experience(ST6) • Internationality (ST7)	• Lack of communication (WK1) • Unclear distribution of responsibility (WK2) • Cultural differences (WK3) • Insufficient understanding of business of the client (WK4) • Insufficient understanding of needs of the client (WK5) • Ineffective sharing of information (WK6)
Opportunities	**Threats**
• Competitive advantage (OP1) • Increase of trust of the clients (OP2) • Increase of quality of the products (OP3) • Gaining valuable experience (OP4) • Opportunity to meet the needs of the market (OP5) • Opportunities of growth (OP6)	• Economic recession (TH1) • Copyright conflicts (TH2) • Different interests (TH3) • Decrease of the value of the common project (TH4) • Insufficient competencies of the client (TH5)

Table 2

Hillson's SWOT analysis table for JSC 'Hnit – Baltic'

		Certainty	Impact	Strengths (ST)							Weaknesses (WK)						Σ
				ST_1	ST_2	ST_3	ST_4	ST_5	ST_6	ST_7	WK_1	WK_2	WK_3	WK_4	WK_5	WK_6	
Opportunities	OP_1	0,6	0,25	0,67					0,57				-0,6				0,31
	OP_2	0,5	0,3		0,23	0,27	0,28				-0,5			-0,5			0,08
	OP_3	0,7	0,3		0,17	0,15					-0,2				-0,5		0,10
	OP_4	0,7	0,2							0,7						-0,5	0,18
	OP_5	0,4	0,15	0,52	0,12							-0,5					0,08
	OP_6	0,6	0,25					0,37					-0,5				0,12
																Total	**0,87**
Threats	TH_1	0,2	0,1														0,02
	TH_2	0,7	0,2	-0,2				-0,6	-0,3						0,52		0,02
	TH_3	0,6	0,2			-0,4				-0,2	0,43	0,2	0,3	0,1			0,21
	TH_4	0,4	0,3								0,2					0,2	0,24
	TH_5	0,7	0,25		-0,3										0,15		0,14
																Total	**0,63**

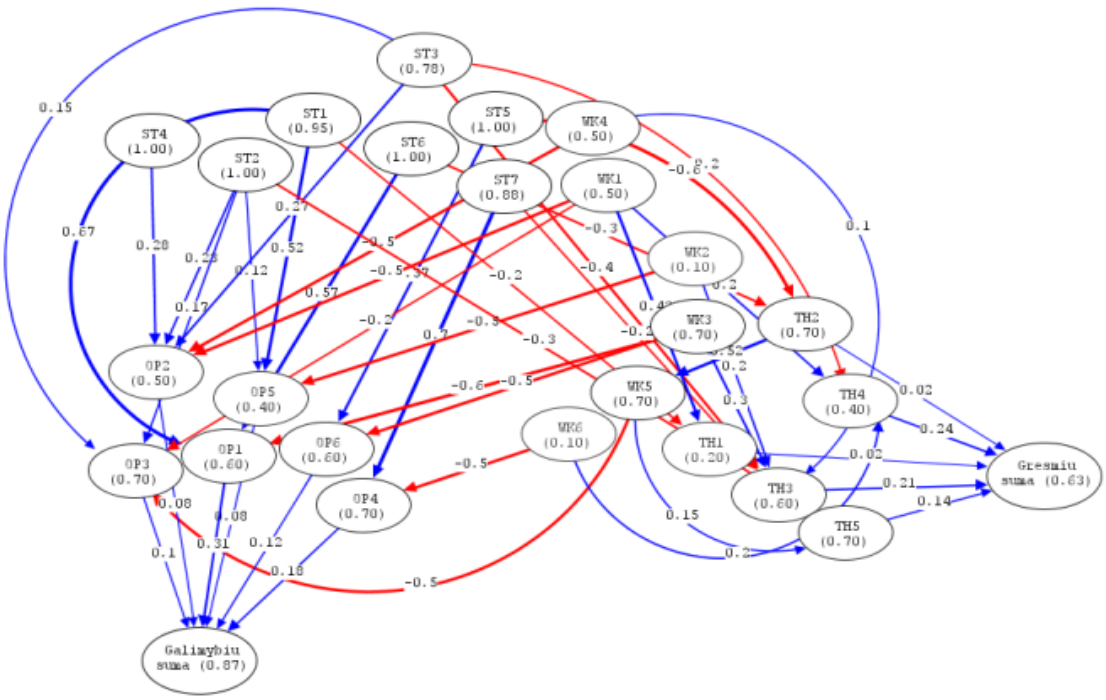

Figure 1. Fuzzy Cognitive Map based on Hillson's table

FCMApp and *SwotFcm* software (developed at Kaunas University of Technology) have been used for such modeling.

In order to validate the results of this investigation, a survey of clients has been made. It has been put in the web site of the enterprise. The clients have received a link to it via e–mail.

The survey consisted of 5 questions. The first four questions ask the clients to evaluate the importance of each of identified strengths, weaknesses, opportunities and threats. The fifth question asked which co-creation projects would be considered by the clients the most successful: up to one month long, up to three months long or up to six months long. Such values have been chosen, because the experts indicated that a typical co-creation project within JSC 'Hnit–Baltic' takes from three to six months.

Seven clients who worked in Lithuania and had co–creation projects with JSC 'Hnit–Baltic' were asked to participate in the survey. The response rate 100 %.

Research results on evaluation of co–creation possibilities

The data received form two focus groups has been used to from the SWOT matrix (Table 1) that allowed to identify the elements and code (they were used in other steps).

Next the experts evaluated those elements numerically. Each opportunity and threat was given an estimate of certainty and of influence on the whole process of co–creation. The influence of strengths and weaknesses on the opportunities and threats has also been evaluated.

According to those estimates Hillson's table was created (Table 2). It shows the factors with corresponding estimates of certainty and influence. Positive estimates correspond to the factors that strengthen the opportunity or threat, while negative estimates correspond to the factors that weaken it.

It can be noted that the total estimate of opportunities is higher than the total estimate of threats. That seems to be a good sign for the enterprise. Figure1 shows the relationships between all the elements graphically.

A Fuzzy Cognitive Map (or a graph), shown in Figure 1, is based on Hillson's table and can only be used to investigate a static situation. In order to investigate a dynamical situation, feedback loops have to be added.

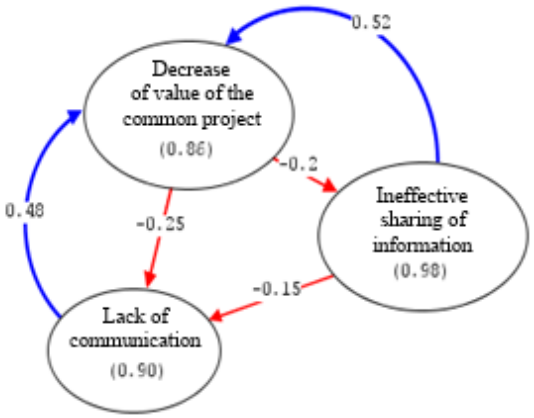

Figure 2. A model with feedback loops

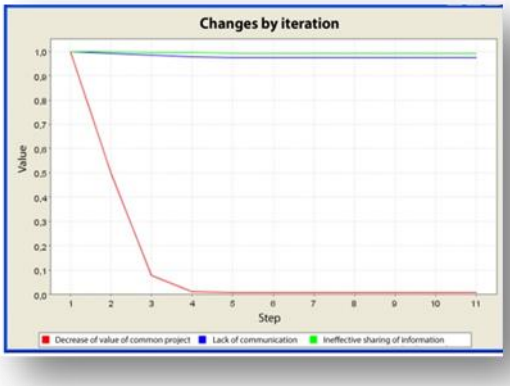

Figure 3. Results of the model with feedback loops – changes by iteration

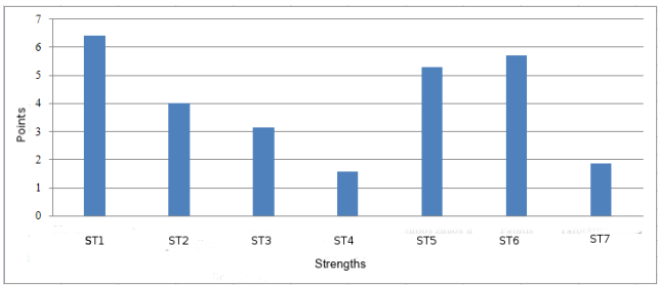

Figure 4. Ranking of strengths in the survey of clients

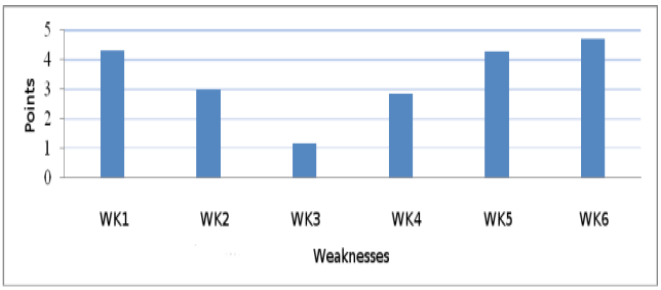

Figure 5. Ranking of weaknesses in the survey of clients

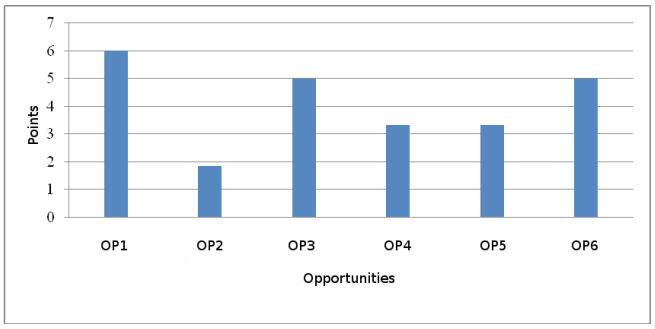

Figure 6. Ranking of opportunities in the survey of clients

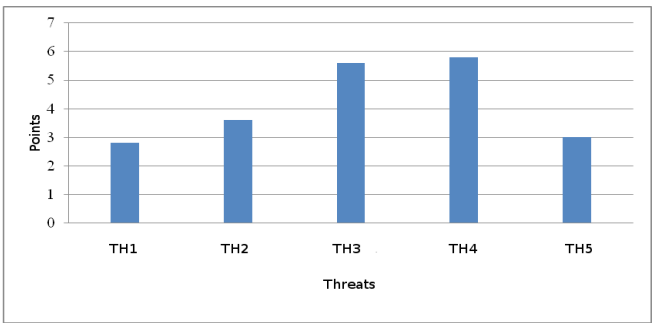

Figure 7. Ranking of threats in the survey of clients

As that would make the model hard to understand, just a part of the model has been extracted. Since the most significant threat would seem to be the TH4 (‘Decrease of the value of the common project’ – opinion, that has been supported by survey of the clients), it has been chosen for modeling.

Hillson’s table shows that this threat has been affected by two weaknesses: Ineffective sharing of information (WK6) and Lack of communication (WK1). Feedback loops can be made with the assumption that an increase of this threat encourages fighting those weaknesses. Also, ineffective sharing of information can be expected to encourage more communication. Thus, we get the model shown in Figure 2.

Figure 3 shows the result – changes of values by iteration.

As it can be seen, the threat decreases with time. That could mean that projects that do not fail because of insufficient communication in the beginning are less likely to fail for that reason later.

Figure 4 shows the average ranking of strengths given by the clients.

As we can see, the clients considered innovativeness of the enterprise as the most important strength. Hillson’s table indicates that this strength was strongly influencing two opportunities (only one strength was influencing more opportunities, and its influence was weaker), which would seem to conform to the opinion of the clients. However, they considered the loyalty of existing clients the least important strength. Hillson’s table indicates that this strength has only influenced one opportunity, which would also conform to the opinion of the clients. Figure 5 shows the average ranking of weaknesses given by the clients.

As it can be seen, the clients have considered weaknesses concerning the lack of communication, sharing of information, and understanding of client's needs the most important ones. Hillson’s table indicates that the first of these weaknesses influences two opportunities and two threats (more than any other), while the other two influence one opportunity and one–two threats each. The clients have considered the weakness concerning cultural differences to be the least important. That seems to contradict the data in Hillson’s table. However this contradiction can be explained by the features of the sample: cultural differences can be expected to be less significant in the case of Lithuanian clients who were included in the survey. Figure 6 shows the average ranking of opportunities given by the clients.

It can be seen that the clients considered the competitive advantage to be the most significant of the opportunities. Hillson’s table also gives this opportunity the highest estimate (0.31). The opportunity that was given the least significance by the clients (increase of trust of the clients) was also the one with the least estimate (0.08) in Hillson’s table. Figure 7 shows the average ranking of threats given by the clients.

It can be noted that in the case of threats the estimates given by the clients closely follow the estimates in Hillson’s table. Only two threats (second, concerning the copyright, and fifth, concerning insufficient competences of the client) are given different levels of significance. Since Hillson’s table took the opinion of the service providers into account, perhaps it could be considered a natural consequence of clients underestimating the problems caused by themselves.

Finally, the fifth question concerned the optimal time period for co-creation projects. The majority of clients (four out of seven) have indicated that co–creation projects

of medium length (up to three months) are the most likely to be successful. Two respondents preferred short–term projects (up to one month) and one – long term projects (up to six months). To some extent, a low popularity of short projects might be related to the situation concerning the threat of decrease of the value of the common project (the one that has been investigated using FCM with feedback loops): short projects are less likely to reach the part when this threat decreases to an acceptable level. The explanation of low popularity of long projects would probably need further investigation.

Conclusions

The discussion of knowledge intensive business services shows that these services are very diverse. They tend to have such features as fulfilling individual needs of the client, close interaction with the client, advisory function, and orientation to the solution of the problems of the client. They require professional knowledge and highly qualified personnel.

Thus, such services are likely to use co-creation when clients actively participate in the creation of the product. It helps generate new ideas, decreases the risk of wrong solutions, increases productivity, growth, return of investment. However, there is a possibility of destruction of the common value, when one participant abuses common resources etc. Thus the enterprise must evaluate all the opportunities and threats.

Thus, a method to evaluate related opportunities and threats has been investigated. It uses Hillson's table and Fuzzy Cognitive Maps. They are quantitative models and require quantitative inputs. Choice of such inputs in this domain is almost inevitably subjective, but this subjectivity has been limited by basing it upon the opinion of experts. In principle, subjectivity could be limited still more by averaging estimates based upon opinions of different experts.

The investigated methods look promising, but further investigation using more fields of business is needed. In the future, such investigations could be generalized using meta–analysis.

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Vertės bendrakūros žinioms imlių verslo paslaugų įmonėje galimybių vertinimo modelis

Santrauka

Sparčiai vykstant globalizacijos procesų integracijai versle, atsiranda vis naujų iššūkių įmonėms: stiprėjanti konkurencija, kintanti šakos struktūra, atsirandančios naujos technologijos, naujos rinkos ir pan. Dinamiška aplinka reikalauja ir naujų sprendimų, siekiant padidinti savo konkurencingumą rinkoje, rasti naujų kompetencijų ir gebėjimų palaikyti ir plėsti verslo santykius. Pastarieji padeda išryškinti vertės ir inovacijų kūrimo potencialą. Žinioms imlios verslo paslaugos, kurioms priklauso ir informacinių technologijų paslaugos, yra nuolat augantis paslaugų subsektorius. Šios paslaugos atlieka nemažai labai svarbių funkcijų ir pasižymi kompleksiškumu, trumpu paslaugų gyvavimo ciklu, inovatyvumu, joms būdinga interaktyvi sąveika, vykstanti tarp paslaugos teikėjo ir kliento, kuri yra lydima kompetencijų vystymo, mokymosi veikiant. Klientai šiuo atveju vaidina svarbų vaidmenį, kuris neretai virsta į bendrakūrą. Pastarasis fenomenas savo ruožtu padeda patenkinti individualizuotus klientų poreikius, didina įmonės produktyvumą, plėtros galimybes ir kt. Mokslinių šaltinių analizė rodo, kad bendrakūra generuoja įvairiapusę naudą jos dalyviams, tačiau lygiai taip galima ir rizika, kuri atsiranda dėl sunkiai nuspėjamų bendrakūros rezultatų. Siekiant išvengti nuostolių, kurie galimi dėl nesėkmingos bendrakūros, svarbu iš anksto įvertinti galimų pasėkmių poveikį įmonės veiklai. Kitaip tariant, reikalinga efektyvi metodika, kuri leistų įvertinti žinioms imlių verslo paslaugų įmonės ir klientų bendrakūros galimybes, kurios gali būti ir teigiamos, ir neigiamos.

Straipsnio tikslas – pagrįsti žinioms imlių verslo paslaugų įmonės ir klientų bendrakūros galimybių vertinimo modelį.

Straipsnyje pirmiausiai atskleidžiamas žinioms imlių verslo paslaugų fenomenas: pagrindžiama šių paslaugų samprata, heterogeniškumas ir savitumas. Vėliau supažindinama su bendrakūros kaip vienos iš žinioms imlių verslo paslaugų savybių samprata; reiškinio privalumais ir trūkumais. Straipsnyje teigiama, kad kai kuriais atvejais bendrakūra gali būti nesėkminga ir netgi rizikinga. Todėl įmonėms, siekiančioms išvengti galimų nuostolių (nesėkmės atveju), būtina iš anksto įvertinti bendrakūros su klientais galimybes ir su tuo susijusią riziką. Tam autoriai siūlo miglų teorijos prieigą, kuri pristatoma aptariant rizikos vertinimo metodus. Atlikus atvejo tyrimą, taikant mišraus tyrimo dizainą ir išanalizavus surinktus duomenis remiantis miglų teorijos nuostatomis, pastebėta, kad derinant dinaminę SSGG analizę ir miglų žemėlapius tarpusavyje, galima įvertinti bendrakūros galimybes ir grėsmes bei jų poveikį įmonės veiklai. Toks paslaugų įmonės bendrakūros su klientais vertinimas leidžia priimti sprendimus, grįstus kompleksine informacija, kuri gaunama tiek iš paslaugų įmonės, tiek iš jos klientų. Nepaisant to, siekiant tobulinti šią metodiką, reikalingi tyrimai, kurie apimtų ne tik informacinėmis technologijomis grįstas žinioms imlių verslo paslaugų įmones, o ir kitas įmones, kurių veikla imli bendrakūrai su klientais.

Reikšminiai žodžiai: bendrakūra, žinioms imlios verslo paslaugos, modeliavimas, miglų teorija.

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