Co-opetition as a business strategy

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Abstract

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The word co-opetition is a relatively new phenomenon in a world of business. Co-opetition is a form business strategy, which was uses the findings of game theory application to identify the possibility and timing when it is best for competing companies to engage into cooperation.

This thesis will present with a systematic way for companies not only to identify such possibilities, but to create them, based on the “game of business” approach. The research and findings of this thesis are derived from the known real business cases examples, literature review and author’s personal experience in the international business environment.

Keywords
Co-opetition, game of business, changing the game

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Introduction

This chapter's aim is to provide the reader with an overview of a background information, the research question (RQ), investigative questions (IQ's), scope, purpose and international aspect of the research, as well as short explanation of co-opetition concept and game theory as a tool for understanding it.

1.1 Background And Short Explanation Of The Concept

The word co-opetition is a relatively new word in business. There is no such word in the traditional business vocabulary because from the traditional capitalistic point of view the competitions must be beaten, market share increased, existing customers secured new customers' inflow is ensured by any means. In other words – business is war, where the success of the business is as necessary as the failure of competitors.

These days the traditional perception of business as war is transforming. Increase in global and local strategic partnerships, importance of long-term relationships with suppliers, feedback from customers, even cooperation with competitors are clear signs of this shift. Nowadays relationships between companies does not seem like "business is war" approach. The realization of the fact that there is seldom "a winner" when business is conducted as "war" is the biggest driver for this transformation. The result of business conducted as "war" is most often a loss in profits for all the parties involved. As an example – price wars in airplane industry in USA has resulted in more money loss than it has made throughout existence of commercial flights industry (D. Street, Marc. 2001, 260).

It might come out as a surprise, but most businesses succeed if other businesses are also successful. For example, the demand for Intel hardware rises when Microsoft introduces more powerful software. The value of Microsoft's software increases substantially when Intel's hardware, which Microsoft is using, is more powerful. It is a win-win business model.

On the other hand, business relationships cannot be classified as peace either. Competitors keeps fighting with each other over market shares, keep fighting with suppliers over costs and keep negotiating with customers over prices. Coming back to the example of Intel and Microsoft's win-win business model – their success hasn't helped Apple in increasing its profits. Business is cooperation when it comes to creating a pie and competition when it comes to dividing it up (Brandenburger and Nalebuff 1996, 4). It is simultaneously war and peace, competition and cooperation.

In this thesis, game theory's basic ideas will be applied to provide a tool to find a strategic solution of bringing together competition and cooperation into co-opetition. Game theory is commonly used in win-lose context because in a game there must be a winner and a loser. But the real value of game theory for business strategies unlocks only when all the basic game theory ideas are put into practice, then game theory can be used to combine competition and cooperation (Brandenburger and Nalebuff 1996, 6).

Game theory can be successfully applied to the world of business, because it provides a structured way of finding and developing strategies when one company`s fate and success depends not only on the action of that company, but also on the actions, which other companies are taking. This idea is becoming valuable in the modern business environment as it has become more globalized and interconnected than ever. Game theory can potentially change people's mindset when they think about the business. The business world is arguably one of the most suitable environments for applications of fundamental ideas of game theory (Brandenburger and Nalebuff 1996, 5.)

I can agree with this Brandenburger's and Nalebuff's statement as nowadays leading management consulting firms are creating business strategy models, based on such fundamental game theory's concepts as "prisoner's dilemma". For example, McKinsey & Company consulting firm offers a model for strategic decision-making, which is based on traditional game theory concepts. (McKinsey & Company 2009, 1).

1.2 Research Question

This thesis aims to prove the efficiency of co-opetition as a business strategy in the modern business environment through the applications of fundamental ideas of game theory and through discussion of examples from real business cases.

The research question (RQ) can be worded as follows:

RQ: "How can the coopetition strategy be applied in business?"

The research question is divided into investigative questions (IQ) to provide more structured and understandable explanation to the research question:

IQ 1. What is the game of business?
IQ 2. Who are the players and what are the roles?
IQ 3. How to identify the possibility of coopetition?

Table 1. Overlay matrix

Research question (RQ)	Investigative questions (IQ)	Theoretical Framework	Research methods	Results
How can the coopetition strategy be applied in business?	IQ 1. What is the game of business?	Game of business and different parts of the game (2)	Desktop	Data
	IQ 2. Who are the players and what are the roles?	Players (3)	Desktop	Data
	IQ 3. How to identify the possibility of coopetition?	Application of game theory to business strategy (5)	Desktop, own business experience	Data, Conclusions, Recommendation of future research

1.3 Demarcation Of The Research

The research is focused on the explaining how fundamental ideas of the game theory can be applied into strategic decision-making. Basic concepts of business as a game, players in the game and provide with real international business-cases examples where the game theory was or could have been implemented will be described. Win-win solutions (co-opetition), based on a game theory approach, will be illustrated through business cases examples.

The research does not include a mathematical explanation and proof of game theory concepts, as it was already done by Nobel Prize winners John von Neumann and Oskar Morgenstern in a book “Theory of Games and Economic Behavior” and John Nash’s” Prisoner’s Dilemma”. The goal is to discover the ways of practical use of game theory in the business world in a systematical and understandable way.

1.4 International Aspect

The concepts discussed in this thesis can be applied in the international environment. More so, globalization and internalization of the world’s economy and business relations are two of the biggest factors the concept of co-opetition and applications of game theory has been increasingly studied and implemented by modern businesses.

1.5 Benefits

The application of game theory to business strategy can potentially benefit everyone. As I mentioned in the Demarcation chapter this thesis will be focusing on modelling a systematic approach to find a win-win solution to games of business. The benefits of a new way of thinking about business as co-opetition have a potential of changing the way business is conducted all over the world.

1.6 Key Concepts

Coopetition concept has been explained in Chapter 1.1

Complementor is an entity, which provides complementary products. Complementor is one of the key concepts of this thesis, along with customer, supplier, and competitor. A player can be described as complementor when customers value the products more with that other player's product than when customers just have original product (Dixit and Nalebuff, 1991, 18).

Game theory is a mathematical method of decision making, where alternative strategies are analyzed to outline the most beneficial course of action for a company, depending on assumptions about competitor's behavior (Sloman and Wride, 2009, 201). It's original theoretical formulation and mathematical solution has been introduced in 1944 by John von Neumann and Oskar Morgenstern in a book "Theory of Games and Economic Behavior". Game theory provides guidance on finding the right strategic decision for any given situation.

Value Frame is a key concept to answering the investigative question 2: who are the players and what are their roles? It provides a clear illustration on how the players are positioned in the game.

2 Game of business

Business is different from other games, as in business game it is possible to have more than one winner. The game of business is evolving, changing and is transformed by participants of the game. This is the reason successful companies are usually not the ones, who are just playing the game, even using their own ways of playing, but the ones who are changing the game of business itself to their own benefit.

Businesses can be making decisions on how to change the game by following intuition or instinct rather than implementing game theory. But game theory provides a systematic method to change the game. Game theory has been introduced to the world as a branch of applied mathematics and is perceived as a science of strategy: it provides tools for analysis of situations, when one player's outcome depends on what other players do. It makes it possible to develop the best possible strategy to increase player's benefit from the game. (Brandenburger and Nalebuff 1996, 6).

For simple demonstration of how game theory works, a simple card game will be discussed. The game consists of 20 students, 19 of which have red cards each and 1 of them (let's call him Brad) has 19 red cards. The rules are the following: for each pair the teacher is paying out 100 € to either Brad or a student, also considering the possible result of their negotiation. It is a free-form negotiation between Brad and the students, but students can't negotiate as a group, it has to be negotiation on an individual basis. The first reaction about this game is that Brad is in much stronger position than the 19 students, because he has a monopoly on black cards. This basically means that students have to accept any price Brad offers any of them for their red card. But this is a misleading interpretation of this game situation. Let's imagine that Brad offers someone 20 € for the red card. The offer gets refused and counteroffer is provided, for example 80 €, and he denies. Then Brad negotiates deals with each of the remaining 18 students and in the end Brad has 1 black card and some has one red card, which means that he needs that person as much as that person needs him, which will most probably result in 50:50 split of the price for the pair. But anyone of the students can implement the same strategy for this game, and that means that the most likely outcome for this card game is that all the deals Brad makes with students is going to be 50:50 pair prize split, as this game is 19 separate negotiations and Brad needs each student as much as each student needs Brad. (Brandenburger and Nalebuff 1996, 43.)

How can game theory help to get more than half of the prize pool in this case? There are five basic elements in any game, identified by game theory concepts: Players, Added values, Rules, Tactics, and Scope. If any of these elements is changed – the game of business is changed. For instance, what would be the consequences if Brad sets one black card on fire? Would each student still sit back and wait until negotiations with other students are over, knowing that someone will be left with nothing? The change in quantity of black cards is an example of change in 1 of the elements of the game – Added values: Brad has made the pie smaller to increase his value in comparison to the total value of students, acknowledging that the compensation for the smaller size of the pie will be increased substantially. (Brandenburger and Nalebuff 1996, 44.)

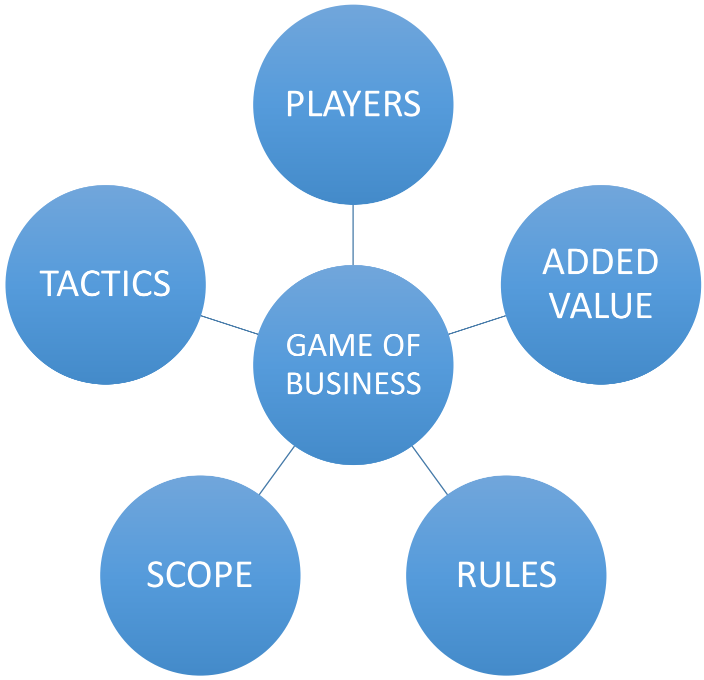


Figure 1: Theoretical framework

2.1 Added Value

As it was showed in the card game example in the previous chapter, the concept of Added Value in game theory provides a basic understanding of who has the most power in the game. Added value shows what each player of the game brings to the game. Simple definition of Added Value is:

"Added Value – an improvement or addition to something that makes it worth more" (Cambridge 2017.)

This is a definition of an Added Value from a game of business perspective:

"Added Value - the size of the pie when the player is in the game minus the size of the pie when the player is out of the game" (Brandenburger and Nalebuff 1996, 45).

It provides an understanding that it is very hard to get from a game more than the player's added value, meaning that the player can take away from the game no more than amount equal to the player's added value.

We can take a look at the card game from previous chapter and look at it purely from Added Value perspective. From students' perspective there is no game without Brad, as he holds all of 19 black cards, which equals the total value of the card game, or 1.900 €.

From Brad's perspective each of 19 students has an added value of 100 €, because without the student's card one less pair can be exchanged for 100 €, therefore it is a 100 € loss. The total sum of the added values is 3.800 €. Given the symmetry of this game it is most likely that Brad will buy the students' cards for 50 € each and sell his for 50 € each.

The situation when Brad burns 1 card, leaving only 18 black cards in the game, is different. Now Brad's added value is smaller, only 1.800 €, but the most important change happened to the student' added value. As there is no student essential to the game, because there is a student, who is going to be left out without a match to his red card, the total added value of students is zero. Brad is the only one with added value and the only one to claim the whole pie, so even if Brad is offering 5 or 10 € for the red card – it is a great offer from his side.

It might be that the card game is a little too simplified example, but a lot of businesses are using the idea from the second version of the game, when Brad burns 1 card. In traditional business language it is called “limiting supply”. For example, The National Football league in USA is making a fortune restricting the number of teams in the league. By doing that NFL is ensuring that there are more cities, who wants to have a football team than there are teams. Most of the teams in NFL nowadays are acting as free agents with huge relocation fees and high negotiation power. (Kevin G. Quinn 2012, 64).

While NFL is making money by decreasing total value of the game and therefore increasing the negotiation power of the team – in a long run it will result in teams being less loyal to their home cities and football fans becoming less loyal to the teams, but there are always pros and cons of market undersupply.

2.2 Rules

In the Brad’s card game there were no rules for negotiations. Brad could have made offers to students, the students could have answered with counteroffer and be on hold after failed negotiations and wait until everyone else has had their shot. There was neither time nor number limit on the negotiations. In business – all games are structured, even though there is no universal set of rules. Rules are different in each game, they can be based on country, industry, laws. For example, most retailers don’t have an option for customers to negotiate the products price – it is take-it-or-leave it rule.

Getting back to Brad’s card game the concept of rules can be explained more visually. Let’s suppose that even at first version of the game, where Brad had 19 cards, only Brad can make offers. The student has to accept or reject Brad’s offer, no counteroffers, no second chance. In this case the key to making more than 50 € for a pair of cards for Brad is to put himself in students’ shoes and imagine how they would play the game. It is not long until you recognize that in this game any student is most likely to accept any split, as long as that student gets some money. The introduced take-it-or-leave-it rule in this card game transfers all power to Brad. Of course, if Brad offers 99:1 split, students might reject an offer out of pride, but as far as experience shows it is very safe to offer 80:20 and even 90:10 split (Brandenburger and Nalebuff 1996, 51.)

In business, rules are much more complex than in Brad’s card game, therefore anticipating other players’ reactions to the rules is much harder. But no matter how complex game is already, any rule, which is being introduced into the game, is changing the balance of power in the game.

2.3 Scope

The scope of the game is the next important part of the game of business. Basically, a game has no boundaries, because we all live in one world and ultimately playing one big game. But this kind of game, without any boundaries, is impossible to analyze. That's why people have created boundaries, or many separate games, which helps to analyze a big game by analyzing many small games. For example, people are talking about national economies, industries as if it is a whole picture of a game. But in reality, the world's economies are highly interdependent, so are industries. The problem in necessity of creating boundaries is that you can mistakenly perceive only a part of the game as a whole game and make a wrong decision. Every game is inevitably connected to other games: one game can affect other games elsewhere, which will affect other games and so on. The boundaries, created by people, in order to help analysis of a bigger game, are not real boundaries – they are fiction. (Brandenburger and Nalebuff 1996, 56.)

There is a good business example, which helps to see what can go wrong if businesses are mistaking smaller game for the bigger ones. In 1989 there were only three types of desktop printer available in the US consumer market. Dot-matrix printers were the low end, laser printers were the high end, with ink-jets were in between of the ladder. Dot-matrix printers accounted for about 80 percent of total unit sales of desktop printers, laser printers around 15 percent, with ink-jet taking the last 5 percent. Prices were $550, $2,200 and $650 accordingly. At that time, Epson was leading in sales of dot-matrix printers while HP led in the laser and ink-jet segments.

Looking at each of the three games – dot-matrix, ink-jet and laser – in isolation suggested that Epson was in the wrong one. The laser segment had the highest prices and margins and was the fastest growing. In August 1989 Epson launched the EPL-6000 laser printer with very competitive price. The product did not really stand out and lacked HP brand recognition, but the price made it a very attractive to the consumers. One week later, HP introduced its LaserJet IIP, priced significantly below the EPL-6000. Epson responded by dropping the price of the EPL-6000 even lower and even succeeded in building up to a 5 percent share of the laser printer business by December 1989. (Brandenburger and Nalebuff 1996, 58).

Due to the intensifying price competition in the laser segment, other players, such as Toshiba, also lowered the prices of their laser printer. Epson's gain stalled. The price competition hurt HP's sales of its ink-jets as well. HP began aggressively marketing the ink-jet printer to counteract the narrowing price gap between the ink-jet and laser printers.

Epson then discovered that it was losing dot-matrix sales to the now comparably prices ink-jet machines. Prices had to come down in the dot-matrix segment, but there wasn't much room to go. Epson's core business was significantly threatened by aggressive pricing strategies of other players for more high-end products. (Kenneth M. Eades, Timothy M. Laseter, Ian Skurnik, Peter L. Rodriguez, Lynn A. Isabella, Paul J. Simko 2010, 179)

What was Epson's mistake? It misunderstood the scope of the printer game. By treating the laser printer game, as it was separate from the dot-matrix game, Epson failed to see that low-price entry into the laser printer segment could put its core business at risk. It is possible that it assumed that high-end laser printers could never cannibalize sales of low-end dot-matrix printers. If so, it failed to link ink-jet segment to laser segment and dot-matrix segment to ink-jet segment. The Epson story shows how a move in one game can affect your pay-offs in other games. The links between the games can cause a cascade effect, and Epson didn't foresee the chain reaction it set off. While thinking of a game from laser printer segment only, Epson's actions seemed reasonable, but from a whole printer market perspective, they weren't. It didn't anticipate the other players, its competitors, reactions to its actions. If it had, it would foresee that it was much better off under the "status quo" (Brandenburger and Nalebuff 1996, 59).

2.4 Tactics

It is important to understand that different people view the world differently, as well as they view the same game differently. People have their own perceptions of a game, which influence the moves they make in the game. Therefore, the game must be described including the suggestions and assumptions of how other people perceive the game – even how the other people would assume the game is perceived etc. The game is always perceived by people in a certain way, which makes it rather possible to predict the actions of other players. Understanding of people's game perceptions is exceptionally important in negotiations. To understand the negotiation process through perception it is useful to take a classic negotiation problem as an example.

It is a common practice, when two partners set up a business, to include in their agreement a rule, describing the process of dividing a pie, in case one of the partners want to exit the business. A widely applied rule in these cases is so-called "Texas Shoot-Out". It works the following way: the partner A, who wants to end the relationship, states the price of his share. The partner B must then either buy the partner A out at stated price, or sell his share at that price. Most people would think that the best price is the one, which would make it equally satisfying whether partner B would buy the business or be bought out. For example, if the total value of the business is $100 million, then the partner A would ask $50 million for his share. In this case, it is not certain that the partner B would accept the offer, but it guarantees the partner A half of the pie. This is not the best way to play this "Texas Shoot-Out" game. The important point in this game is not what the partner A thinks the business is worth, but what the partner B thinks it's worth.

The correct strategy would be to figure out how the partner B is perceiving the business, i.e. at which price the partner would be equally happy to either buy or sell his shares. It can happen, that partner A value business at $100 million, but partner B values it only at $60 million, so if partner A states the price of $50 million, he would be more than happy to sell his share for that price because it is more than half of his total valuation of the business. Therefore, in this case partner A would rather offer $31 million and partner B will still sell his shares, as it is also more than the half of the price he values the business. After achieving a good understanding of how the business is value by another player – different incentives can be created, depending what outcome needs to be achieved. In most cases of such business split-ups it is possible to figure out the other partner's perception on the value of the business because you have been working with the partner for some period of time and most probably have been discussing the value of the business.

Another considerable way of playing the game, if partner A does not feel confident in the assessment of partner B's valuation, is to encourage partner B to state the price first. This way partner A can act accordingly to his own valuation and choose whether to buy or sell. In the Texas Shoot-Out, as in every business game, the right strategy depends on people's perceptions and sometimes perceptions play the most important role in the game (Brandenburger and Nalebuff 1996, 53).

There is one more interesting example on importance of player's perceptions of a game they are playing in. In one big-budget action movie, the director and the main character star had some differences, which has resulted in director quitting. The studio had difficulties in finding a replacement, as none of the candidates was available and the production schedule tightening up, so the studio was willing to do whatever it takes and spend as much as it was required to hire a new director. The film's writer decided to propose himself for the director's job. The writer has never directed a big-budget movie before, but it was important for the studio that the movie's main star liked him, and he had an experience in directing several episodes of some TV series. The studio has found itself in a desperate situation and the scenario of taking the writer for the job was seen as the only option. The writer himself was desperate to make a move into directing industry, therefore he has told his agent to get the best possible deal from the studio, but not to push too much on the salary, if that would become a deciding factor. In fact, the writer was ready to do the job for no salary whatsoever. When the agent and the studio's lawyer met at the negotiation table – the writer's agent made a first move and said that his client would do the job for 300,000 USD. The lawyer, on the other hand, has been authorized by the studio to hire a writer for 750,000 USD, but was allowed to go as high as 2 million dollars.

As you might have guessed, the lawyer was very pleased to hear that the writer is ready to do the job for more than twice lower salary, than the studio's initial thought and, furthermore, he negotiated with the agent and they settled at 250,000 USD. So, at this point of the story it seems that everyone is happy, and both the writer and the studio got what they wanted: the writer moved into directing and didn't have to go down his initial salary proposal too much, the studio signed up who they wanted and saved a lot of money from the lawyer's successful negotiation. But once the management of the studio heard that the writer's salary is that much lower than the one they had in mind initially – he got horrified. Mainly because he knew that once the main star in the movie will find out how low the salary of the movie's director is, the star would start protesting that he is being surrounded by a second-hand talent. They've raised a future director's salary up to 750,000 USD, the lawyer got suspended from such deal in the future and the writer has fired his agent, as he has decided that the agent was incompetent.

The story indeed had a happy end for the studio, the writer and the star, but not for the lawyer and the agent, because they did not take into account all players' perspectives in this game (Brandenburger and Nalebuff 1996, 56).

3 Players

3.1 Rationality Of The Players

In early studies of game theory there was not so much discussion regarding rationality or irrationality of the players. It is often imagined that game theory requires all the players to act rationally, based on the idea that everyone in a game is there to maximize profits, everyone understands the game, everyone perceive the game they should, everyone has equal access to information, there are no such things as pride, jealousy, fairness, charity, ambition, pity etc. The problem is that this is not how the real world is. The way game theory textbooks present a view of a rational man doesn’t apply very well to a real world of business. The reason for that is that there has been a lot of studies in analysis of zero-sum games, like poker and chess, where one person’s gain is another person’s loss. But games of business are hardly ever zero-sum games, meaning that you can succeed together or fail together as well. That is the main reason why players need to be concerned regarding another players’ rationality in a game. In the card game, which was discussed in chapter 2, the game looks as a zero-sum game at first glance – if Brad’s payoff is more, the student’s is less and vice versa, but the fact that in case of absence of agreement between Brad and a student, they both get nothing, which makes it a non-zero-sum game and both players need to start thinking about another person’s rationality (Brandenburger and Nalebuff 1996, 58).

It is needed to open up a word “rationality” a little bit. This is what a word “rationality” means in a game theory context: “a person is rational if he does the best he can, given how he perceives the game (including his perceptions of perceptions) and how he evaluates the various possible outcomes of the game” (Brandenburger and Nalebuff 1996, 60).

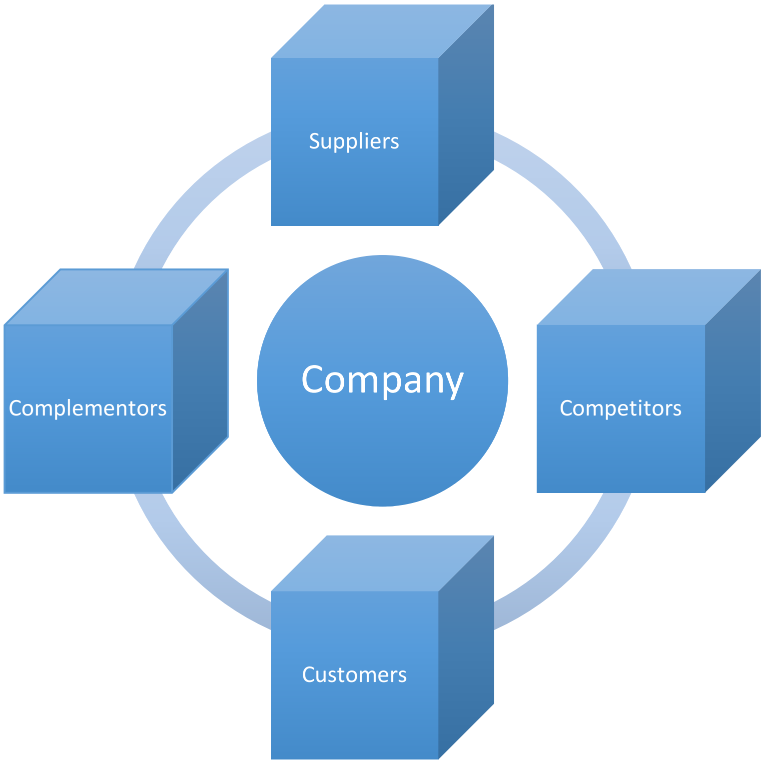
This essentially means that two different people perceive the game differently, but it does not necessarily mean that either of them is irrational. One of them can have better access to the information and know something the other person does not know, and this naturally makes the other person’s perception of the game to differ from the other ones. Everyone is doing their best, based on what they know. Even when two people have same information and yet evaluate the same outcome differently does not mean that one of them is irrational. Not everyone looks just at the money. People are motivated by many things such as pride, ambition, charity, jealousy and more. This subject has been slightly discussed in chapter 2 in the Brad’s card game example. Rationally the last student would be better of even with 1 cent than with nothing, but these kinds of feelings would not allow him to accept that offer and if Brad fails to recognize it – it is only his mistake. It is very easy to say that someone is acting irrationally, instead of trying to see that someone's perspective.

An example, discussed by Brandenburger and Nalebuff 1996, the case of differences in perception is explained clearly: ”In a case we encountered, senior management was ready to fire an “irrational” salesman. He was so single-minded in going after volume that he cut prices to the point of destroying profits. He was a one-man price war. But the salesman wasn't irrational. He understood all too well what determined his bonus. While, in theory, he was compensated on both sales volume and profit margins, he knew that when push came to shove, keeping the factory at capacity was what really mattered. In practice, his bonus depended on hitting and exceeding sales targets more than on maintaining profit margins. Instead of firing him, management came to see his perspective. The bonus compensation system was changed, and the salesman became a whole new person.”

I find the idea of rationality or irrationality of the players in a game is not worth discussing further, because the fact of rationality and irrationality of the player cannot be judged upon without looking at a game from different perspectives – one's own and the one of every other player. And the moment the game is seen from that other player's perspective – the action, which once has been perceived as irrational, becomes rational, because it provides an understanding of the other person's action motives.

3.2 Value Frame

In this chapter I will provide with an answer on a second IQ: “Who are the players and what are the roles?”. The Value Frame helps to visualize it.



If business is called a game, who are the players in this game? There are 3 players, which are quite classic nowadays – customers, suppliers and competitors. In the value frame above there is one more player, called complementor. The complementor is the opposite to competitor, but it cannot be named “partner” or “ally” mostly because the terms “partner” or “ally” can be basically applied to any of the other three players, customers, suppliers and competitors can also be partners or allies. In a game of business, it is necessary to keeps these roles separated. Additionally, the terms “partner” and “ally” do not present the nature of business relationship at a full scale and does not allow to watch at a full picture of business tensions between the players. (Brandenburger and Nalebuff 1996, 17).

In the following chapters the terms and roles of the players in the value frame will be explained in more detail.

3.3 Competitors And Complementors

Along the horizontal dimension are the company's Competitors and Complementors. Here's a definition of the term:

"A player is your complementor if customers value your product more when they have the other player's product than when they have your product alone."

For example, Oscar Mayer and Coleman's are complementors. It is a common knowledge that most of the people value hot dogs more when they have mustard than when they don't. And vice versa. The way to identify complementors is to view the business and its products from its customers' perspective and answer the questions: what else would customers like to buy that would make this product more valuable to them? (Brandenburger and Nalebuff 1996, 17).

Competitors are the opposite case:
"A player is your competitor if customers value your product less when they have the other player's product than when they have your product alone."

Companies Coca-Cola and Pepsi-Cola are classic example of two competitors. If you bought a Coke, the chance of you buying a Pepsi after that bottle of Coke are more less zero. (Brandenburger and Nalebuff 1996, 17). Or for example two different airlines, such as Aeroflot and Transairo in Russia. If anybody bought a ticket with Aeroflot – that person probably wouldn't buy a ticket from Transairo to the same destination. The traditional definition of competitors is that competitors are companies in the same industry and those companies offer similar products or services. But as nowadays customers care more about the end result, not about whether the product or a service has been provided by a company, which belong to any other industry, it becomes much more important to use the similar question for identifying competitors as was used to identify complementors: "What else would customers buy that would make this product less valuable to them? How else might customer get their needs fulfilled?" If businesses are able to answer those questions – the list of the competitors might grow significantly, and it will become more current.

For example, Microsoft (Skype) and American Airlines can become competitors in business trips' market as videoconferencing became a cheaper way to conduct meetings. These two companies are operating in two different industries – software and travel, though they can be called competitors. Another example would be Facebook and TV. Until not so recently TV was one of the few places for advertisement along with newspapers and magazines. But social media network Facebook grew to the point where it is as effective to advertise via their platforms as it is on TV. Also, whole industries can change shapes, as it happened with banking industry – before it used to be separated into selling loans, insurances, providing savings plans etc. Nowadays it is one marketplace for financial services.

3.4 Suppliers And Customers

The bottom and top halves of the Value Frame are suppliers and customers. It is more beneficial to provide a definition of a supplier through the prism of complementor and competitor definitions:

"A player is your complementor if it's more attractive for a supplier to provide resources to you when it's also supplying the other player than when it's supplying you alone." (Brandenburger and Nalebuff 1996, 19).

"A player is your competitor if it's less attractive for a supplier to provide resources to you when it's also supplying the other player than when it's supplying you alone." (Brandenburger and Nalebuff 1996, 19).

Competing for suppliers in business is as hard as competing for customers. For example, capital investors are suppliers and the competition for their investments crosses industry boundaries. Employees are suppliers as well and competitions for employees crosses industry boundaries too. It is quite understandable that companies from different industries want to hire freshly graduated engineers or business administration management graduates.

3.5 Players playing different roles at the same time

Companies can be both competitors and complementors, depending from which perspective they are looking onto it. For example, Compaq and Dell compete for Intel's latest chip, but they both are also complementors with respect to Intel, because for Intel to develop the next-generation chip, Intel will need to spread development costs between all of the hardware manufacturers, which means that each manufacturer will pay less for having that next-generation chip inside their hardware. Without each other the costs of having that chip inside would be higher.

The same can be applied to leading airlines. Airlines compete for customers, landing slot, gate and more. But with respect to Boeing or Airbus both airlines are complementors, because it is much cheaper for Boeing to design new airplanes for all leading airlines together than to design each airplane for each airline. The biggest chunk of development costs will be shared between these companies and greater demand would help Boeing or Airbus move down the learning curve faster.

Another example, the Museum of Modern Art and the Guggenheim Museum in US compete for visitors, members, paintings and funding. But it's not all competition for these two museums. If there is an option to visit several museums in a weekend, it would help to bring people into New York. More people – more visitors for both of the museums. Thus, the Guggenheim is a complementor as well as a competitor to Museum of Modern Art. Therefore, two museums decided to run together an advertising campaign called "Summer in the City", which had a tremendous success at some point. Additionally, The Guggenheim might borrow a painting from Museum of Modern Arts or lend it a painting to create a special show. Then the Guggenheim becomes a customer and supplier as well as a competitor and complementor to Museum of Modern Arts. (Branden burger and Malouf 1996, 29).

The fact that such opposite role as competitor and complementor can be combined in the relationship of players in the game explains some of the strange behaviors of competing businesses. For example, in St. Petersburg in Russia, all recognized jewelry stores are situated on one street in center of the city. Why would the competitors locate next to each other? The reason for this behavior is the realization that this way customers, instead of choosing one store to go to, can choose one location in center, surf around all the shops in the area and decide where they would want to buy the product from. Additionally, the understanding of that all certified antique shops are located in one place creates much more value than if these shops would be located all around the city. These antique shops, besides being competitors of each other, became complementors to each other in terms of creating bigger market.

Another example can be taken from the relationship between Amazon.com and traditional book sellers. Since the beginning of the Amazon.com sales of the electronic books on the internet, traditional book sellers saw a pure competitor in face of nowadays online retail giant. But that was only half of the picture because traditional book sellers did not recognize the fact that growth of sales via online book sellers such as Amazon.com and BookZone helped to stimulate their sales as well. When someone finds a positive book review on Amazon.com it does not necessarily mean that they will purchase that book on

Amazon.com, they might prefer to have a printer version of it. Additionally, if the book sales via Internet space growth that stimulates authors and publishers to produce more books, which is good not only for online book sellers and traditional book shops, but also for customers. (Brandenburger and Nalebuff 1996, 31).
One of the most important facts, derived from this chapter is that the companies are first of all complementors when it comes to growing the market and then they become competitors when it comes to dividing the market.

3.6 Balances Of The Value Frame

It is important to understand that the dimensions of the Value Frame are creating a perfect balance in a game of business. The first balance is on the vertical dimension of the Value Frame – customers and suppliers. Both customers and suppliers are equally important for the company in order to create value. It happens quite often in business that the suppliers are not recognized to be as important as customers, but the reality is that working closely with your supplier is as important as listening to customer's needs. The relationship with supplier is as important as the relationship with the customer. I have noticed that businesses start to realize that as many more people are sharing posts and articles on LinkedIn platform about importance of employee-employer relationship and that the old-fashioned rule "customer comes first" is being removed with a new rule "create the biggest pie". For example, if a customer wants something extraordinary, such as special delivery during the holiday weekend, but not willing to pay extra in order for business to provide a compensation for a worker, who will lose a holiday weekend with his family, then putting the customer first and satisfying the order would not create value. It would destroy value, because while not getting anything extra from one end, customer, the relationship at the other end, supplier, gets damaged. There is second balance on the horizontal dimension of the Value Frame – competitors and complementors. These two players are basically a mirror image of each other and with the previous discussion about undervaluation of suppliers compared to customers, is also true in regard to complementors. There are numerous opportunities in recognizing and benefiting from complementor relationships. (Brandenburger and Nalebuff 1996, 22).

4 Research Methods

Major information sources for this thesis research are: literature review, examples of theory application to known business cases and own experience. Reasons why there has been no qualitative or quantitative research conducted are mainly that global businesses, for which such research could have been conducted, have their decision-makers or strategy departments outside of Finland and even those, which are located in Finland have shown no interest in discussing their decision-making process from game theory perspective, as most of the businesses I have contacted regarding the subject informed me that they are making their strategic decisions mostly based on the internal data and simple market research.

5 Application of game theory to business strategy

5.1 Changing The Game

When people are talking about changing their business, in most of the cases they relate to that in order to succeed in business the rules of how business game is played need to be changed. And most of businesses spend a significant amount of money trying to change the rules by hiring lobbyists or inventing new contract clauses etc. It is certainly a good way to change the game, but not the only one. As shown in the chapter 2, the game of business consists of 5 elements, with rules being only one of them. The reasoning is that to change the game it is not optimal to concentrate only on changing the rules of the game, but to concentrate on all of elements of the game to transform the game. Each time any of these 5 elements are changed – the game transforms into a new one. In the following chapter I will show how the game can be transformed with changing one of the elements, which I find to be the most important in regard to implementation of co-opetition strategy – Players. (Brandenburger and Nalebuff 1996, 70). In the following chapter of the thesis I will not discuss examples of applications of changing another 4 elements of the game, but it is important to note that the theoretical framework in chapter 2 in its full application allows businesses to identify and develop business strategy on a systematic basis, without missing anything out.

5.2 Changing Players

There are basically two types of players in a game of business. The one, who is already in a game and the one, who wants to enter the game. It is quite common for new entrants to think of changing the game before entering it. But the fact is that once the player entered the game – he has already changed it. The game with and without any player are two different games. In this chapter I will discuss the known business cases from a business game point of view and make general summaries on how the new entrant changes the game, and how to change the game by entering it in order to get the biggest pay-off.

The first business case will show how Holland Sweetener Company tried to enter the game, but failed to recognize all elements of the game, therefore the entry hasn't been the most successful one. In 1980s the biggest contributor to Coca-Cola's and Pepsi's diet soda success was a low-calorie, high-intensity sweetener aspartame, which is more known under name NutraSweet. NutraSweet had high revenues and around 70 % gross margins. This kind of ratio eventually attracts new entrants, but at that time NutraSweet had an extended patent on aspartame until 1987 in Europe and 1992 in USA. In 1986 the Holland Sweetener Company has started to build an aspartame manufacturing plant in the

Netherlands, preparing their market entry after expiration of NutraSweet's patent. The whole purpose of creating the Holland Sweetener joint venture was to challenge NutraSweet's monopoly of the aspartame market. Also because of complexity of aspartame manufacturing and therefore high investment requirements, Dutch company took a calculated risk, confident in that there won't be a lot of new entrants upon expiration of the NutraSweet's patent.

When NutraSweet's European patent has expired in 1987, Dutch company made an aggressive market entry, slashing the prices of aspartame. During their entry, prices on aspartame has fell to 45-60 $ per kilogram. With such low prices, Dutch company was losing more money than they've expected. In order to make it, they have appealed to the European courts and managed to get antidumping duties imposed on NutraSweet. This has allowed Holland Sweetener to survive the price war in Europe and prepare to move into USA, which was the biggest market for Coca-Cola's and Pepsi's diet sodas.

After openly disclosing their wish to start a price war in USA, two main potential customers, Pepsi and Coca-Cola have expressed a high interest in having two suppliers instead of one. Up till this point it all sounds very optimistic for the Dutch company, but not long after of these statements from Coca-Cola's and Pepsi's representatives, when Holland Sweetener was ready to create competition between suppliers, both soda giants have signed new long-term contracts with NutraSweet. The reason for that was that neither of them were ready to give another soda manufacturer an opportunity to base their marketing campaigns on exclusive use of forerunner of aspartame, NutraSweet, and make an impression on its customers that the secret recipe of diet sodas has changed. It was NutraSweet's brand identity and good reputation soda manufacturers cared about, not their monopoly of the market. (Branden burger and Malouf 1996, 75).

It appears so that Holland Sweetener has provided Coca-Cola and Pepsi a possibility to negotiate a better deal with NutraSweet as before their negotiating power has been much at the lower levels because NutraSweet was the only supplier who could provide the needed ingredient to their products. The mistake Dutch company has made was that they did not identify their own strength in changing the game at the moment they decide to enter it. Their entrance on one hand significantly decreased NutraSweet's added value in the game, by 50% and on the other hand increased added value of Coca-Cola and Pepsi. Of course, added value of the product itself was not the Dutch company's strength, but their strength was in providing competition and ability to bring the prices down. If Holland Sweetener would have identified these changes in the aspartame game, it would have been better off if it would have decided to negotiate the price of their participation in the game before openly stating it because eventually just their commitment to entering the USA market has saved both of the manufacturers millions of dollars. For example, they could have asked from Pepsi and Coca-Cola a guaranteed contract for entering the game or something similar. It happened so that soda manufacturers have identified the issue with Holland Sweetener exiting the game as it would leave them completely dependent on NutraSweet and offered the Dutch company to stay in the market in exchange for guaranteed contract, but perhaps the terms and amount of this contract would have been significantly higher, if Holland Sweetener would have played the game better from the beginning.

Next business case is from a field of biddings on government contracts in Russia. I have been involved in such biddings myself therefore this is based on my own gathered knowledge and experience in this field of business. As in any other country, Russian government is the biggest contractor in the whole country with variety of auctions on construction, renovation, building, equipment purchases and other types of contracts. In simple words the way the auctions are conducted is that government is posting its contracts on the special auction platforms with all technical documentation needed and other requirements and then different companies get engaged into online bidding.

To be accepted to the auction the company needs to provide the government officials with the commercial offer with confirming documents that you are authorized service provider, meaning that the company is an authorized service provider with proven track record in the industry it is planning to compete for contract in. It is required by law to have more than 2 bidders in the auction, otherwise the auction gets cancelled or postponed. Naturally, some of the government contracts are so huge that there is only handful amount of companies who would be able to take on those kinds of projects. There is another legal requirement for the government contract, such as a limited amount of auctions one company can win otherwise it would be a subject to Anti-Monopoly government officials checks. One more interesting fact about these auctions is that the auction results can be revised if the deciding committee receives an official complaint from any of the participants of the auction. These auctions are all about identifying who are the players in a game and how one’s entry to the auction will change it.

Let’s assume there is a big construction site auction opened on the bidding platform and there is only one company who is capable of fulfilling all of the requirements and deadlines, but if it is the only participant of this auction it will never get accepted because of the rule on at least 2 participants in the auction. The only way of winning this auction is to invite one more participant into the auction. This is an opportunity for smaller companies to get their piece of a pie if they negotiate the price of their entry right and manage to spot such auction on time. Timing is very essential in the case because as a participant of an auction you will be required to propose a realistic commercial offer to the contractor and meet all other needed requirements. This is one way of getting paid to play in this game.

The other way, which has recently even created a separate service industry is to participate in the auction without even targeting the winning of it. You participate in the auction in order to make an official complaint therefore delaying the decision of the committee, which on one hand creates more time for other competitors to provide the contractor with commercial offers and on the other hand results in losses of the company who won the original auction. The companies specializing on writing complaints have identified the opportunity in change of the game at the time of their entry to the game and are getting paid for playing by several companies competing in the auction.

The trick in changing the game with profitable outcome is the company's ability to identify all of the players in the game, understand the implications of the rules of the game, foresee the scope of the game and develop explicit tactics, in this case finding the right timeframe for action.

It might come out as a surprise, but bidding on those kind of auctions is not very much different from the situations a lot of business come across when the competitor's one of the largest customers is reaching out and asking for an offer because he is not satisfied with his current supplier and would like to switch. What do most of the businesses do in this situation? Naturally, it is unforgivable to lose such a chance and the company starts using all of available resources in order to provide the customer with a prompt offer in the following days. The fact that the customer has reached out to the company first gives a feeling that if the price is going to be spot on, it might be quite possible that the customer would switch to that company's services. At the same time, there is a suspicion that the customer is just going to use the offer for negotiation of better price with their current supplier, but if a decent offer is not provided to this customer – there is no chance in getting this business.

The company would come back to the customer with an aggressive bid, customer thanks you and never gets back about the offer. This happens very often in business, right? Obviously, in this case the customer did as the company has suspected – negotiated a better contract with their current supplier, based on the offered price.

There is a simple solution for this problem – ask the customer to pay for the bid. At first it sounds insane, but if businesses would ask themselves not the question "How low should we bid", but "How important is it for this customer that we bid", based on the chapter 2.1 explanation of Added Value, then the businesses would recognize that, if it is very important for the customer that a bid is placed – the bidder should get rewarded for playing the game. If it is not so important – there has never been a chance in getting this business anyway.

There are multiple ways of getting paid for playing the game. Simple cash payment doesn't work too often, but for example guaranteed sales contract or coverage of preparation expenses or support in prepaying the initial inventory or other costs, or even asking the customer for the information regarding your competitor's pricing, if it is a valuable information for the company. It can be valuable for the company to engage into longer negotiation process with the customer before making a bid to meet any of the decision-makers and try to build a relationship with them. Sometimes it is also effective to ask the customer for the price which guarantees you getting this contract. (Branden burger and Malouf 1996, 84).

The way the game of business is played, most of the players would prefer to expand the amount of players in the game, especially if they are suppliers and complementors. It is quite logical. I will present with one example from my own experience, when Finnish branch of ABB has identified an opportunity, probably even without realizing it, to bring into the game another company, who is their customer, complementor, supplier and competitor at the same time.

As one of the members in the board of directors in Finnish privately owned company Pyhäjärven Lomakylä, in 2015 I have been contacted by a good friend, who is working in the field of competing and fulfilling the government auctions, which I have discussed earlier about. He asked me if we would have been interested to ask for an offer from ABB in Finland for uninterrupted power supply devices. I had no reason to refuse and contacted them, asking for an offer. It turned out that the price they've provided was 3 times lower than identical ABB branded products in Russia from Russian branch of ABB. The only problem was that due to clause of intellectual property rights in trade agreement between EU and Russia, Pyhäjärven Lomakylä was not allowed to import the goods in Russia without receiving the permission of intellectual property rights owner in Russia.

Historically, it is known to be almost impossible to receive a permission of such kind, especially in this case because the contract would be placed on the public auction platform. But Pyhäjärven Lomakylä was interested in getting the contract from their contractor and ABB Finland was interested in getting the contract from Pyhäjärven Lomakylä. So, what did we do? Because it was a very interesting contract for both companies – we have contacted the ABB headquarters in Switzerland and engaged into long negotiation process on how can we make it happen. We have explained to the senior management that because of extremely high prices in Russia the main contractor, which is a big ministry in Russia, would probably not choose the ABB branded products, but the products of their main competitor. And because the ABB branch in Russia had a complete independence from ABB Switzerland in setting its own prices – there was no possibility in negotiating the price with help of ABB Switzerland senior management.

The outcome of these negotiations was a long-term permission for ABB Finland to sell ABB branded products to Russian market through Pyhäjärven Lomakylä. The company ABB has recognized that because of the current rules how their company is operating they could have lost an opportunity to build a long-term relationship with one of the biggest contractors in the world – Russian government, and had to create a competition within company's structure. Additionally, ABB Finland has managed to bring in a new player into the market – Pyhäjärven Lomakylä, because according to the permission, Pyhäjärven Lomakylä, alongside with ABB Finland, can officially sell ABB branded products. Pyhäjärven Lomakylä is also a customer and a supplier of the shipments to Russia consulting for ABB Finland, as well as a complementor – without Pyhäjärven Lomakylä ABB Finland would not be able to win the auctions on the products it can provide.

The epilogue of this business case is that eventually it was a win-win situation for ABB Finland, main contractor, Pyhäjärven Lomakylä and also ABB Global - the companies, who succeeded in identifying the right coopetition strategy in solving this case.

Sometimes companies get so involved in the competition with competitors that start missing out opportunities in bringing in other players, suppliers or customers. This has happened with portal crane manufacturer Harnischfeger Industries. Back then, in 1970s portal cranes started to replace outdated mobile stackers in order to move logs on the sites of forest product companies. Portal cranes were more efficient and forest companies started to realize the benefits of such replacement. Harnischfeger was the first company to start selling these machines and the margins of such production were outstanding – if the company would have managed to capture all cost savings, it could have made approximately 5 million dollars per crane. Unfortunately, it happened so that several former Harnischfeger executes realized an opportunity and bought out a small crane maker Kranco in order to compete with Harnischfeger in the portal crane business. The price and technical specifications of Kranco's machines were similar to Harnschfeger's, the market of the portal cranes was just growing, and buyers were buying low quantity of machines in order to test them first. With the knowledge that Harnschfeger Industries and Kranco were in hard competition – buyers were able to get machines for much lower price than both companies were hoping to sell them for initially and the original plan of making 5 million dollars per crane were not any close to the reality.

Both companies were facing a price war, which is rarely a good position to be in for any company. Eventually Harnischfeger has won the price was as Kranco declared bankruptcy and got bought out by leading Finnish engineering company Kone. The consequences of the such outcome of price war are that Harnischfeger has been losing money while keeping low prices in order to starve out Kranco and after Kranco has been bought out – Harnischfeger is facing much more formidable and resourceful competitor. There could have been a better outcome for both Kranco and Harnischfeger if the latter would have played the game in a better way. The reason it was possible is the market conditions back then for portal crane technology. The technology was more efficient than the old one, but if buyer would want to increase both savings and efficiency, they would need to change the configuration of their production sites.

Harnischfeger had the ability to allocate more resources to educate the market of such possibility by showing the forest product companies the benefits from new configuration in addition to portal crane purchase. This would expand the market substantially and both Harnischfeger and Kranco be in a win-win situation, rather than a loss-loss price war. Additionally, Harnischfeger should have realized that it was not necessary to fight with Kranco about every sale, because Kranco was a small company with rather limited production-capacity and after Kranco would have some own customers – it would be less aggressive in coming after Harnischfeger's customers and they would not need to place their pricing on the lowest possible level. (Brandenburger and Nalebuff 1996, 94).

There are many more known business cases, which help to understand how important it is to identify the game the company is playing and who the company is playing with and against. The cases presented in this chapter were subjectively the best cases to show the possibilities from implementation of viewing business as a game with different elements and players.

6 Conclusion

Our lives are based on compromises, which people are imagining, creating, destroying and creating again – this is how life is structured. In business the best definition for compromise would be coopetition, because compromise is never a cooperation or competition – in compromises people give something up to receive something, or receiving something while knowing that without the compromise decision they would not achieve anything. In the research question I have asked “How coopetition strategy can be applied in a game of business?”. The meaning of the question would not change if it is changed to “How compromising can be applied in a game of business?”. The reason why I would like to switch to this word in the conclusion is that this thesis provides a framework for identifying compromise possibilities not just in business, but in everyday life, if person’s life would be viewed as a game with different scopes, rules, perspectives and players. When all the elements of the game are identified – any particular player can not only take advantages of created situations, based on own experience and expertise, but learn how to create those situations, according to what kind of advantage the player needs to achieve. In this thesis it has been shown how businesses can create such situations, by identifying and transforming the elements of the game – rules, scope, tactics, added value and players.

I have tested game theory in regards to application of coopetition strategy in business by analyzing numerous business cases. The result of the analysis is that coopetition strategy, based on game theory’s fundamentals is one of the most underestimated and underused ways of dealing with competition in nowadays intensively globalizing business environment.

It was out of scope of this thesis to discuss possibilities of identification and introduction of different rules, for example different contract clauses or different tactics, such as first-mover tactics or credible threat tactics in the game. I would suggest these subjects for the further discussion and research in this field.

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