UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS

CONTEXTUAL VARIABLES OF OPEN INNOVATION PARADIGM IN THE BUSINESS ENVIRONMENT OF SLOVENIAN COMPANIES

Ljubljana, September 2011 JANA KRAPEŽ

DECLARATION OF AUTHORSHIP

I, Jana Krapež, hereby certify to be the author of this Master's thesis that was written under mentorship of Miha Škerlavaj, PhD, Assistant Professor, and in compliance with the Act of Author's and Related Rights – 1, Article 21. I herewith agree this thesis to be published on the website pages of the Faculty of Economics, University of Ljubljana, Slovenia.

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INTRODUCTION

In the last few years, the world has been facing the deepest recession since the Second World War (Conway & Monaghan, 2009; Elliott, 2009; Fleming, 2009). In order to survive, the companies should have turned towards innovation (Yuen, Zeitoun & Smith, 2009). Open innovation can be useful in reducing costs of research and development (hereinafter R&D) and it can create new opportunities for growth. According to Chesbrough and Garman (2009) a company can locate some of innovation projects outside its corporate borders and so it can generate extra income by licensing. In addition, with external collaboration company can foster partner relationship and share costs and risks of major innovation projects with external partners.

Vanhaverbeke (2010) believes that companies could finance their innovation projects by acquiring external technology since during the crisis, many of their competitors are financially weak, "healthy" companies can create a competitive advantage when they continue their R&D projects. What is more, huge savings are possible when companies develop new technologies in collaboration.

Regarding the current state of the economy, businesses on all continents are trying to answer questions like what should be done differently so that such events will not be repeated, what can be done now in order to stimulate the economy, help its growth and with it to achieve recovery? The question I would like to address in this thesis is how can businesses drive innovations effectively and efficiently to create new growth opportunities, particularly in this difficult time due to the global economic crisis.

The advantages of companies' cooperation are increasing in the open innovation era. As the focus shifted from internal R&D activities, academics started emphasizing that the companies should be open to innovation from the outside (Rigby & Zook, 2002; Christensen, Olesen & Kjær, 2005). Not all the smart people work for one company, so companies need to cooperate and share their know-how and skills (Chesbrough, 2003a; Enkel, Gassmann & Chesbrough, 2009). Koschatzky, Kulicke and Zenker (2001, p. 6) observed "companies, which do not cooperate and which do not exchange knowledge, reduce their knowledge base on a long-term basis and lose the ability to enter into exchange relations with other firms and organizations". Collaboration with external partners is necessary to improve company's innovativeness and to reduce time needed to enter the market. To put a more positive spin on the situation, what can the government and other company's stakeholders do, what can be changed in context, in internal, narrower external and broader external environment, to accelerate open innovation?

Chesbrough (2003a) claims that companies that do not innovate die. What is more, he believes that today, where the only constant is change, the task of managing innovation is vital for companies of every size in every industry. Innovation is vital to sustain and advance companies' current business; it is critical for growing new business and also a very difficult process to manage (Chesbrough & Schwartz, 2007; Enkel et al., 2009, Koschatzky et al., 2001).

The wider scope of my thesis is from the field of management, within which the thesis deals with the innovation management, specifically with elements from the business environment that influence open innovation in company. The research topic of my master's thesis is therefore a construct of contextual variables of the open innovation research model. The research model also includes the study of how much support external and internal business environments in Slovenian companies provide for a company. Until now, only a few empirical studies had been done on the topic of open innovation (Chesbrough, 2006; Finger & Stucki, 2009; Lindegaard, 2010; Sousa, 2008; Enkel & Gassmann, 2007). Schroll (2009a) calls for the application of a large-scale empirical study on a world-wide or at least on an Europe-wide level. However, this is still rather premature, since first the context of open innovation should be conceptualized and after that, quantitative analysis will be possible.

Master's thesis problematics. Innovation is crucial for future development of society as a whole, economy, companies and individuals. The Economist (2007) made a research study in which they ranked economies by innovation performance during the time period of 2002-2006, with a forecast to 2011. The main findings were that innovation has a positive influence on both national economic growth and on company performance. In addition, at the corporate level, they found that among companies, which identify innovation as crucial, 46% perform better than their competitors. What is more, their survey found that within a wide range of elements in explaining what makes a country innovative, at the top were technical skills of the employees (92% of respondents) and quality of IT infrastructure (also 92%). According to the study Japan, Switzerland, the U.S. and Sweden were the world's top four innovators among the 82 surveyed economies, and they predict that they will maintain these positions during the period from 2007–2011.

Johnson, Edquist and Lundvall (2003) defined open innovation as a technical process as well as a social and economic one, which leads to a product or process. The Oslo Manual (OECD, 2005a, p. 46) sees innovation as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations". Birkinshaw, Hamel, and Mol (2008, p. 1) specified management innovation as the "invention and implementation of a management practice, process, structure, or technique that is new to the state of the art".

Many companies have currently adopted open innovation models in an effort to increase their innovativeness (Finger & Stucki, 2009; Lindegaard, 2010; Sousa, 2008). Chesbrough, (2003b, p. 37) claims that "the central idea behind open innovation is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own R&D activities, but should instead buy or license processes or inventions (i.e. patents) from other companies, institutes, suppliers and customers". All internal innovations and inventions that are not used in the company should be taken to the market through licensing, joint ventures and spin-offs (Sichelman, 2010).

As originally explained by Chesbrough (2003a, p. xxiv) "open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and

external paths to market, as the firms look to advance their technology. Open innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model". Chesbrough's (2006, p.1) more recent and preferred definition is: "Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. It assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology".

Over the past years, scholars have produced a vast body of academic research on innovation (Jaffe, 1989; Adams, 1990; Nelson & Rosenberg, 1993; Mansfield, 1998; Cohen, Nelson & Walsh, 2002). After the theoretical definition had been set, some empirical studies on open innovation were made. Most empirical studies have focused on a small sample of cases, concentrated within high-tech-industries only from certain countries, in particular the U.S. (Birkinshaw et al., 2008).

There is a need to first conceptualize the context of open innovation, since the context dependency of open innovation is one of the least understood and researched themes (Huizingh, 2010). In addition, more research is needed on the internal and external environment characteristics that are affecting company's performance, beginning with qualitative researches and only then, quantitative analysis can be carried out. The decision to apply qualitative or quantitative methods depends on the open innovation level being analyzed. Some questions are difficult to answer via a standardized questionnaire. They require more meaningful results so qualitative analysis, like in-depth interviews, case study and observation, may be required. In the past years high importance has been dedicated to the idea of open innovation, both in practice as well as in the academic sphere. Huizingh (2010) claims that open innovation is not a clear-cut concept. In his opinion, open innovation comes in many forms and tastes, which adds to the richness of the concept but hinders theory development.

In the latest survey of the Boston Consulting Group (2010) 26% of participating senior executives quote open innovation as their top priority and 45% of respondents said it is one of their companies' top three priorities. However, Rangus (2010) claims that in Slovenian companies, high-tech as well as low-tech, the trend of introducing the concept of open innovation is still not visible. Open innovation can be difficult, often because managers lack an understanding of how to innovate; they are missing a framework within which their companies can successfully deliver innovative products or introduce innovative processes (Cooke, 2005; Dodgson, Gann & Salter, 2006; Dahlandera & Gann, 2010). Therefore, it is necessary to develop open innovation frameworks, which will help companies to understand their business environment (internal and external) and how to take advantage of it in order to facilitate open innovation.

In my master's thesis I will first theoretically conceptualize elements from the business environment that can influence open innovation in Slovenian companies and then I will make a qualitative empirical evaluation of the theoretical model. This can serve as a background for future studies. The open innovations paradigm is a new trend for performing R&D since it has

become an integral part of the innovation strategies and business models of companies in recent years. The main emphasis of this approach is on setting cooperation in the form of direct industry-to-academia joint R&D projects and in developing corresponding competence incubators around the most relevant technologies.

Master's thesis purpose and goals. The purpose of my thesis is to present elements from the internal, narrower and broader external business environment that can impact open innovation in Slovenian companies. I intend to determine the company's context (ecosystem) with the intention of finding out what the necessary and needed conditions for the companies to benefit from open innovation are. The last part of the thesis will focus on the current state of open innovation adoption in Slovenian companies. With my thesis I would like to contribute to the development of science by defining all the necessary elements and determinants from the environment that influence open innovation in Slovenian companies and based on this I will develop a theoretical model. At the end I will test my model with the data from Slovenian companies and institutions. I have conducted 7 interviews with institutions and 7 interviews with companies that have tried to introduce more open approaches to innovation, with the aim of providing guidance for others who are considering implementing open innovation in their own businesses.

Research question: Which factors and contextual variables influence open innovation in companies? What can we do to improve and encourage open innovation within and among organizations at the level of narrower and broader business environment?

According to Schroll (2009b) not all companies are successful at open innovation. So, what are the characteristics companies and economies should posses for successful adaptation of open innovation? To be successful, profound changes with strong belief in the open innovation paradigm are required. Some companies embrace the paradigm – their R&D is fully based on open innovation principles, they share intellectual property with competitors, customers, partners, suppliers, etc., whereas other companies may need open innovation to solve their internal R&D shortages (Schroll, 2009b).

Is business environment enabling or what is more, encouraging open innovation in companies? In some countries, like Scandinavian countries, external environment is providing support for open innovation (Lemola & Lievonen, 2008). With my research I will try to find out how much support external and internal business environments in Slovenian companies provide for open innovation. In order to make research viable I will determine criteria that surveyed companies should meet. I plan to conduct interviews especially in companies that collaborate and are linked with the educational institutions and company's external stakeholders (researchers, Ministry of Education, etc.).

The **fundamental goal** of my master's thesis is to develop a research model with the help of substantial theoretical methodological processes and test it with empirical research (qualitative research methodological process). The objectives of this master's thesis are as follows: (1) determining the basics of innovation management and defining the different types of innovation; (2) defining open innovation; (3) outlining the elements from the

internal, narrower and broader external environment; (4) creating a theoretical model with elements and determinants from the environment that influences open innovation in companies; (5) do qualitative research among 7 Slovenian companies and 7 institutions and to test the model with the gathered data from interviews.

I will connect the key elements of my research model (internal, narrower external and broader external environment) with the relevant cause-effect relationships, which I will determine in the thesis.

Methodology. In the theoretical part of my master's thesis I will use the descriptive method of scientific research. The descriptive research designs enable researchers to describe or present cutting edge of open innovation and its environment. Later, I will use a general cognitive process research method, based on domestic and mostly foreign literature from the field of open innovation, published mainly in scientific papers, articles as well as in magazines, books and websites. In addition, I will also use a descriptive comparative method by which I will compare the findings of the individual authors.

By using a scientific compilation method I will combine different findings into a whole. Throughout the whole master's thesis the synthesis method will be used, with the help of which I will merge the individual scientific observations. At the end I will use a conceptual design method and method of model development.

The purpose of my research is to discuss important fields of innovation that are still left rather unexplored. Although there is increasing interest in open innovation, literature on this theme is still limited, both in terms of the amount of publications and in terms of the number of authors (Graham & Mowery, 2010). In addition, there are only few broad empirical studies available on open innovation (mainly case studies). What is more, most studies focus only on specific industries (mostly high-tech) or are limited to specific countries.

The empirical part of the thesis will be based on a qualitative survey, which will be conducted through semi-structured interviews. The focus of my qualitative research will be on understanding the full multi-dimensional, dynamic picture of the contextual variables of the open innovation paradigm among and around Slovenian companies. I believe qualitative methods are useful, not only in providing rich descriptions of complex phenomena, but in constructing or developing theories or conceptual frameworks and in generating hypotheses to explain those phenomena. After conducting interviews, I will test my research model based on their findings. So the results will be as valid, reliable and relevant as possible, I will try to gather data on the sample of institutions' and companies' representatives on the same level of management.

During the composition of my master's thesis I came across some obstacles. Since there hasn't been any in depth analysis on the topic of open innovation in Slovenian companies done yet, I came across the problem of gathering data about open innovation in these companies. Being aware of all these key issues I focused on data from different media: data, which I gathered

with interviews/surveys and national newspapers, magazines, researches that were already made, papers, etc.

Master's thesis structure. My master's thesis consists of four main chapters. At first I define innovation management by describing different types of innovations according to Tidd (2005). After that, I focus on the difference between radical and incremental innovation, including uncertainties and management of radical innovations and then I define disruptive innovations. In the following subsection I define the difference between technological and non-technological innovations and I conclude the first chapter by outlining the closed innovation model and the transition from closed to open innovation.

In the second chapter, I concentrate on the concept of open innovation, its progressiveness and the main differences between the open and closed innovation models. I explain the core open innovation processes, critical elements and challenges in managing open innovation, its benefits and disadvantages and I reason out this chapter with the overview of existing studies on the theme of open innovation context.

I introduce the third chapter with the context of business environment for fostering open innovation within and among organizations. I define the elements of internal, narrower and broader external environment.

In the fourth chapter the conceptualization of the research model follows. I begin with the description of the current Slovenian business environment, followed by an explanation of research design and methodology; present the research instrument, operationalize constructs, describe data collection and sample characteristics and explain the research methods used. In the next subsection, I describe the contextual variables of open innovation research model, and then introduce the main findings of the qualitative research. Finally, in the last subsection, I focus on the main determinants from the environment that influence open innovation in Slovenian companies.

The final chapter deals with the discussion of the significance of the obtained results, evaluation and contribution of the thesis, its limits and I give recommendations for further research.

1 INNOVATION MANAGEMENT

Innovation is an important topic in the study of economics, business, design, technology, sociology and engineering. It has become one of the hottest topics in innovation management, searching for the term "innovation" in Google Scholar provides over 2.1 million hits, which proves just how popular it has become.

Schumpeter (1934) defined economic innovation as the (1) introduction of a new good, that is one with which consumers are not yet familiar or of a new quality of a good; (2) the introduction of a improved or better method of production, which need by no means be

founded upon a discovery scientifically new and can also exist in a better way of handling a commodity commercially; (3) the opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before; (4) the conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created; and (5) the carrying out of the better organization of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position.

Throughout the last three decades several other definitions of innovation have come up. Initiative for Mainstreaming Innovation (IFAD, 2011) defines innovation as a process, which adds value or comes up with solution to problems in a new manner. To be innovative, an idea, a product or an approach has to be: (1) new in the context it is to be applied; (2) useful, according to the expected goal or to the problem to be solved; and (3) able to "sustain" after the test period (more in Table 1 bellow).

Table 1: Definition of innovation by IFAD 2011

Characteristic	Description of characteristic
New in the context it is to be applied.	The new aspect can refer to the geographical context, the scale, the field, the discipline or the type of businesses (it could be a lesson learned in one context or sector to be applied to another).
Useful, according to the expected goal or to the problem to be solved.	To be an innovation, a new idea, a new product or an approach must have an added value for their users and bring solutions to particular constraints or problems.
Able to "sustain" after the test period.	An innovation is a product or an idea with up-scaling potential, which can be shown through its sustainability and efficiency beyond the test period.

Source: IFAD, innovation strategy, 2011.

Schmittlein (1982, p. 57) claims that "innovation does not relate just to a new product that would come into the marketplace but it can occur in processes and approaches to the marketplace". Schumann (1994, p. 1) defines innovation as "the way of transforming the resources of an enterprise through the creativity of people into new resources and wealth". According to Hesselbein, Goldsmith and Somerville, (2002, p. 9) "innovation is a change that creates a new dimension of performance", whereas Cabral (1998, 2003) sees innovation as a kind of a new element, which is introduced in the network that changes the costs of transactions between at least two actors, elements or nodes, in the network.

Landau and Rosenberg (1986) believe that an idea has to be replicable at an economical cost and must satisfy a certain need in order to be called an innovation. Innovation results from narrowing the gap between customers' needs and performance of a product. Although many innovations are created from inventions, it is possible to innovate without inventing, and to invent without innovating.

To explain this more in detail I should first define the difference between innovation and invention. Innovation is all about the practical application of new inventions into marketable products or services. Invention on the other hand is all about the formulation of new ideas for products or processes.

Borchardt (2009) explains that invention is new technology that really changes things, that is a radical disruption. Side effects of an invention create new opportunities. Invention can result in the creation of an entirely new industry. An excellent example is the invention of the car, by Ferdinand Verbiest, in 1672. It took a while, but this invention not only improved transportation infrastructure, but it also gave the economy the boost it needed. On the other side, Borchardt (2009) claims innovation is seldom accompanied by major disruptions. In his opinion, innovation literally means renewing something. As a consequence, innovation is much safer than invention.

1.1 The typology of innovation

Companies are constantly under competitive pressures and in order to survive they need to innovate (Škerlavaj, Song & Lee, 2010). There are plenty of inventions in the world per year but only a few of them will become true innovations that challenge the "status quo" and they make it because they successfully fulfill the yet unmet need (Gopalakrishnan & Bierly, 2001). Due to the uncertainty in the way the term innovation is operationalized in new product development literature, excess definitions for innovation types were created. The terms product, process, positioning, paradigm, business model, radical, incremental, disruptive, technological versus non-technological, open and close innovation are used to identify different types of innovations. Consequentially the question, what is the difference between these different classifications, arises. However, until today consistent definitions for these innovation types have not yet emerged from the new product research community (Garcia & Calantone, 2002).

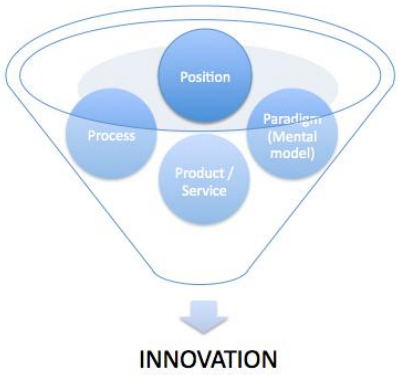
1.1.1 Types of innovation

According to Tidd (2005) there are four types of innovation; consequently the innovator has four pathways to investigate when searching for good ideas: (1) Product Innovation – new products or improvements of products; (2) Process Innovation – where some part of the process is improved to bring benefit; (3) Positioning Innovation – the creation of value by changing the customer's perception of a product; and (4) Paradigm Innovation – where major shifts in thinking cause change (more in Figure 1 on the following page).

Product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics (OECD, 2005a). For several companies,

creating new products is a fundamental path by which they adapt and transform themselves in altering environments (Brown & Eisenhardt, 1995).

Figure 1: Types of innovation



Hewlett-Packard (HP) transformed from an instruments company to a computer-based one through new product development. Intel changed from a memory company to a microprocessor firm through product development (Burgelman, 1991). Another example for successful product innovation is the development of the Walkman by Sony. Between 1980 and 1990, Sony launched 160 different versions of Walkman on the market, which amounts to a new model on average every 25 days. Using incremental innovations Sony built up a leading position in the global market for consumer electronics (Morris, 2006).

There are many other success stories about product breakthrough innovations**,** which changed the market completely. The innovative technologies and products like the Windows operating system, internet, digital photography, MP3 technology and other endless examples revolutionized the world and rewarded companies like Microsoft, Google, Sony and Apple with large profits and a pole position in the global market. Ten years ago nobody knew anything about Google but the company has developed rapidly in the last decade with its breakthrough solution as an internet searching machine to a highly profitable giant (Morris, 2006).

Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products (OECD, 2005a).

An expressive example of process innovation is Toyota with its famous production system, which enables the production of cars with the highest efficiency and quality in the world. Toyota developed the most efficient car manufacturing process, which cuts changeover time from initially three hours to three minutes. This successful 'KAIZEN' concept (Japanese word for 'continuous improvements') was adapted and applied by manufactures in many industries around the world (Morris, 2006).

A new airplane design or a new 4D TV system would represent a product innovation. Whereas process innovations are changes in production methods or technology used to manufacture the

product. Tidd (2005) believes that the line between product and process innovation can be blurred – for example, a new iPad is both a product and a process innovation.

Buxton (2005) argues that innovation in process trumps innovation in product. He examined the research investment strategies between the U.S. and Japan in the post-war years. His observation was that the U.S. took a materialistic approach to their investment, focusing on products, while the Japanese focused on the process. In addition, the U.S. incurred highest up-front costs, while the Japanese reaped the primary profit due to their superior processes of manufacturing and distribution. Buxton (2005) also gives examples that are visible today – Apple and Dell. Apple has a lower market share on PC market than Acer, but Apple has beautiful, design-intense systems. Dell's computers, on the other hand, are designed more conservatively, but because of their process they are ranked second in the global PC market and are now just behind HP (Duncan, 2011; Foresman, 2010; Kahney, 2010).

A **positioning innovation** takes place by repositioning the perception of an established product or process in a particular user context. It is aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product in the customer's mind (OECD, 2005a).

A great example of positioning innovation is the case of Henry Ford. He changed the face of transportation by changing the underlying model from one, which offered a handmade specialist product for a few wealthy customers to a new one, which offered a car for everyman at a price they could afford. The ensuing shift from craft to mass production was nothing short of a revolution in the way cars were created and delivered (Womack, 1996). At this point it is necessary to point out that making the new approach work in practice also requires extensive product and process innovation.

Paradigm innovation changes in the underlying mental models, which frame what the organization does. In other words, paradigm innovation is basically a result of social changes that influence people's attitudes towards something e.g. products (OECD, 2005a).

Recent examples of paradigm innovation include the shift to low-cost airlines, the provision of online insurance and other financial services and the repositioning of drinks like coffee and fruit juice as premium 'designer' products. In its later days Enron became infamous for financial malpractice but originally it came to prominence as a small gas pipeline contractor, which realized the potential in paradigm innovation in the utilities business. In a climate of deregulation and with global interconnection through grid distribution systems energy and other utilities like telecommunications bandwidth increasingly became commodities, which could be traded much as sugar (Tidd, 2001).

However, Johnson, Christensen and Kagermann (2008) identify another, the fifth type of innovation – the **Business model innovation**. They believe that when a company re-configures a value-chain by (a) creating a new customer and/or (b) by creating or eliminating a channel and/or (c) by re-defining a pricing model, it is doing a business model innovation. In order to understand the concept of business model innovation, it helps to have a clear

definition of what a business model is. It is defined as a conceptual framework for identifying how a company creates, delivers and extracts value. It typically includes a whole set of integrated components, all of which can be looked on as opportunities for innovation and competitive advantage. Every component of the existing business model can be seen as a potential opportunity to create value, as well as a potential blind spot that competitors could use to undermine or devalue the competitive position of a company (Skarczynski & Gibson, 2008).

Tata Nano is an example of a business model innovation, which created a new customer by offering 4-wheelers to 2-wheeler owners (BusinessWeek.com, 2010). In addition, there are also business model innovations aim to provide significant competitive advantages for companies by creating superior experience for their customers. They do not focus on innovations in technologies or products but on providing new and better business models to fit the customer's needs (Comes & Berniker, 2008).

Another famous example of business model innovation is Starbucks Coffee. Starbucks entered the premium specialty coffee market in which there was no competition at all. The main marketing strategy was to represent Starbucks' store as a new life style, a 'third place' between work and home where customers can enjoy a variety of hot and cold beverages with different flavors in a convenient atmosphere. Starbucks opened on average 720 stores annually in the last 20 years. The Starbucks Corporation is nowadays a multinational coffee and coffeehouse chain with more than 16,600 stores in 43 countries. The breakthrough innovation in a business model enabled Starbucks to develop from a local coffee bean roaster and retailer in Seattle to a famous international corporation (Khanh, 2010).

1.1.2 Radical innovation versus incremental innovation

In past years there were several authors who used different terminology in discussing the concept of open innovation, but even though they were using different terminology they were defining it the same way. Because of this it is difficult to evaluate the pioneers of Incremental-Radical dichotomy (Abernathy & Utterback, 1978; Porter, 1986; Tushman & Anderson, 1986; Dewar & Dutton, 1986, Damanpour, 1988).

Incremental innovations (also called 'continuous' or 'sustaining' innovations) reinforce existing products, services, or technologies and enhance the potential of established product/service designs and technologies (Ettlie, 1983). Accordingly, incremental innovative capability is defined as the capability to generate innovations that refine and reinforce existing products and services (Scocco, 2006). These innovations focus generally on modifications of already existing products and services. Usually the goal is to improve functionality, increase quality, lower cost, or create a new design of a product. They help companies to keep up with the competition and retain market share.

Radical innovations (also called 'breakthrough product and technology' innovations or 'discontinuous' innovations), on the other hand, are major transformations of existing

products, services, or technologies that often make the dominant product/service designs and technologies obsolete (Chandy & Tellis, 2000). Thus, radical innovative capability is the capability to generate innovations that significantly transform existing products and services (Scocco, 2006). Such innovations overcome problems that have not yet been solved, or had not even been recognized before. As a consequence, these innovations help the company to grow rapidly and effect profit distribution between companies in the market.

According to Scocco (2006) there are two dimensions that we can use to separate an incremental from a radical innovation:

- The first is an internal dimension, based on the knowledge and resources involved. An incremental innovation will build upon existing knowledge and resources within a certain company, meaning it will be competence-enhancing. A radical innovation, on the other hand, will require completely new knowledge and/or resources and will be, therefore, competence-destroying.
- The second dimension, the external one, differentiates innovation based on the technological changes and on the impact upon market competitiveness. An incremental innovation will involve modest technological changes and the existing products on the market will remain competitive. A radical innovation will instead involve large technological advancements, rendering the existing products non-competitive and obsolete.

1.1.2.1 General differences

Incremental innovation is much less risky than radical innovation since it looks at what is already being done and simply improves it. In some cases, incremental innovation also involves new technologies or new materials; however, there is a big difference in the purpose of adopting new technologies between incremental and radical innovation. In incremental innovation, new technologies and materials were used to assist improvement of existing product systems, while radical innovation adopts new technologies or new materials as the innovation drives to develop extremely new products (Damanpour, 1988; Yen & Wei, 2009).

Table 2: Incremental innovation versus radical innovation

Incremental innovation	Radical innovation
Exploits existing technology.	Explores new technology.
Low uncertainty.	High uncertainty.
Focuses on cost or feature improvements in existing processes, products, services.	Focuses on products, processes or services with unprecedented performance features.
Improves competitiveness with current markets or industries.	Creates a dramatic change that transforms existing markets or industries or creates new ones.

Source: C. Yen and H. S. Wei, Patterns of the Incremental and Radical Innovation of Design-Driven Enterprises, 2009, p. 300.

Radical innovation in comparison to incremental innovation goes far beyond the current products. On one side it can represent a new application of current technologies or materials to innovation. This type of radical innovation is design and creativity orientation, which requires a development team with open-minded thinking to identify potential opportunities. The other is new technology orientation. This type of radical innovations involves the application of new developed technologies. The role of design is only to support the transformation of technologies into a real product (Damanpour, 1988; Yen & Wei, 2009).

1.1.2.2 Uncertainties and management of radical innovations

Radical innovation requires organizations to move into unknown territory and experiment with new processes that largely avoid systemization. Typically radical innovation has been considered the domain of startups that reject the processes and infrastructure, which is used by large established companies, which have learned to stand out at incremental improvement processes (Colarelli & McDermott, 2004).

As mentioned above, radical innovations are portrayed by higher levels of uncertainties – technical, market and organizational. These high levels of uncertainties generate unexpected challenges for project management and they must be resolved: (1) technical uncertainties – issues related to completeness and correctness of the underlying scientific knowledge and the technical specifications; (2) market uncertainties – issues related to customer needs and wants; and (3) organizational uncertainties – organization resistance that stems from a fundamental conflict between the mainstream organization and the radical innovation team. For radical projects to mature, uncertainty must be reduced on all three dimensions (Meyer, 1997).

New competencies are required to address the challenge of radical innovation project management. According to Leifer et al. (2000) these challenges include:

- Motivating radical idea generation and capturing promising ideas;
- Managing radical innovation projects;
- Engaging individual initiative – upper managers, project teams, and key individuals;
- Forecasting markets for radical innovation; and
- Reducing uncertainty in the business model.

According to Leifer et al. (2000) distinctive features of radical innovation projects are: (1) production of an entirely new set of performance features, (2) production of improvements in known performance features of five times or greater, (3) significant (30% or greater) reduction in cost of production.

1.1.2.3 Disruptive innovations

Disruption is a market phenomenon and has little to do with technology; therefore disruptive innovation may or may not represent a major technical breakthrough. A **disruptive innovation** is an innovation that disrupts an existing market. It describes innovations that improve a product or service in ways that the market does not expect, typically by lowering prices or designing for a different set of consumers. A disruptive innovation usually starts as a low-quality differentiated product in a smaller segment of a large mature market, which demands attributes that the mainstream market does not, and which is willing to give up performance attributes that the mainstream market is not (Christensen, 2003).

According to Tapscott (2008) the main reason "disruption" causes confusion is that it sounds like "major upset". This leads us to falsely conflate disruptive innovation with technically radical innovation. As a result disruptive is often confused with radical. In fact, in most documented cases of disruption, the disruptive innovation was a minor/incremental change and well within the technical capabilities of the company.

A good example of disruptive innovations are smaller, cheaper hard drives, which were disrupting incumbent hard drive makers, laser printers disrupting ink jet printers and, most recently, the Nintendo Wii starting to disrupt the Playstation and the Xbox. Even though they were major, some innovations such as jet airplane engines were not disruptive with respect to the technologies they displaced (piston engines). In each case, the incumbents benefited from these non-disruptive, or sustaining innovations (Venkatesh, 2007).

1.1.3 Technological innovation versus non-technological innovation

The traditional concept of innovation in firms distinguishes product and process innovation. Since both are typically associated with the development or application of new technologies, these innovations are often called technological innovations (Schmidt & Rammer, 2007).

Company's innovation activities traditionally consist of product and process innovation (Adner, 2001; Shavinina, 2003). As already explained above (section 1.1.1 of this chapter), both types of innovation are often connected with the development of new technologies (Utterback & Abernathy, 1975). New products usually include new technical features that offer new characteristics or increase the quality of a product (Brown & Eisenhardt, 1995; Damanpour, Szabat & Evan, 1989). New processes then repose on the use of these new technologies to improve the efficiency of production (Morris, 2006; Damanpour, Szabat & Evan, 1989). The Oslo Manual (OECD, 2005a) directly linked product and process innovation with technological innovation.

According to OECD (1993, p. 116) "technological innovations comprise new products and processes and significant technological changes of products and processes. An innovation has been implemented if it has been introduced on the market (product innovation)".

Non-technological innovation on the other hand is defined by Schmidt and Rammer (2007, p. 1) "as the introduction of new organizational methods or the introduction of new marketing methods". They claim that non-technological innovation stimulates success of product innovation sales with market novelties and cost reductions from new organizational processes.

In existing literature, the technological view of innovation has been criticized for different reasons. Firstly, technological innovation is seen as biased to innovation in manufacturing and it is perceived as not being able to fully capture innovation in services (Hipp & Grupp, 2005; Hipp, Tether & Miles, 2000). Secondly, companies do not just need innovation for developing and applying new technologies but they also need to reorganize and adopt new business models, company's organization and marketing (Baranano, 2003; Boer & During 2001). And finally, innovation management literature points out the crucial role of joining product, process and non-technological innovation in order to successfully implement new ideas on the market. It also emphasizes the importance of linking R&D, technological innovation and new marketing approaches (Griffin & Hauser 1996; Tidd, Bessant & Pavitt, 2001; Cozzarin & Perzival, 2006).

Schumpeter (1934) points out the importance of non-technological innovation. He distinguished five types of innovations, two referring to technological innovations (introducing new products and introducing new processes) while he linked the other three to the concept of non-technological innovation (opening of new markets, developing new sources of supply and creation of new market structures).

As a consequence, companies should include not just the concept of technological innovation but also the concept of non-technological innovation in their strategies, The Oslo Manual (OECD, 2005b), embraced this view and presented two new types of innovation, organizational innovation and marketing innovation, which complement the standard concepts of product and process innovations (meaning technological innovation).

According to OECD (2005b, p. 180) "an organizational innovation is the implementation of a new organizational method in the company's business practices, workplace organization or external relations". In addition, OECD (2005b, p. 172) defined marketing innovation as "the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing".

Organizational innovation refers to the implementation of new organizational methods not used in the company before, whereas marketing innovation is the implementation of a new marketing method (OECD, 2005b; Ertürk, 2009). The basis for separating these two types of innovation is the difference in the role that technology has in them. Technological innovations on one side are characterized by developing or using new technologies, such us new technological knowledge and inventions, whereas non-technological innovation on the other side do not necessarily involve the change or adoption of new technology, but may rest on the use of new organizational concepts (Schmidt & Rammer, 2007).

1.1.4 Open innovation versus closed innovation

For more than a century, managers have seen technology as the primary method to implement and perform their business strategies. However, many of today's most breathtaking and disruptive innovations now tend to occur at the intersection of market insight (understanding the market and customers) and technological know-how. In the last couple of decades we have been facing increasing speed of technological changes and as a consequence, company by itself can no longer achieve technology-based new business development (McGrath & Macmillan, 2000).

As a result, innovative companies have changed the way they search for new ideas, they are adopting open strategies, which involve the use of a wide range of external partners and resources in order to achieve and maintain innovation (Laursen & Salter, 2004). Cooperation with other companies has therefore become a vital part of company's strategy (Keil, 2002; Chesbrough 2003a). Chesbrough (2003a, p. xxiv) invented the term open innovation and he defines it as "a paradigm that assumes that firms can and should use external ideas as well as internal ideas and internal and external paths to market, as the firms look to advance their technology". The term explains how companies cooperate and share technologies. Since 2003 there has been an increased interest of practitioners and academics to the context of open innovation (Laursen & Salter, 2005; Chesbrough, 2006).

According to Chesbrough (2003a), we are witnessing an extreme shift in innovation paradigms from closed to open business models. Chesbrough uses the term paradigm shift, which was originally invented by Thomas Kuhn. Kuhn (1962) describes paradigm shifts as a change in the basic assumptions, or paradigms, within the ruling theory of science. The expression highlights the fundamental change in how companies commercialize industrial knowledge.

1.1.4.1 The concept of open and closed innovation

The evolution from closed to open innovation was officially explained in the 29th Information Systems Research Conference in Scandinavia (ISRCS) in 2006. As a result it was pointed out that when trying to increase customer loyalty or attracting new customers, companies needed to increase customer involvement in research and design. According to Hargadon and Sutton (1997) design, R&D and social processes lie in the heart of the open innovation paradigm.

Closed innovation is a principal business model used by the majority of American companies in the twentieth century. Chesbrough (2003a) explains that closed innovation believes that if you want something done right, you have got to do it yourself. In previous centuries closed innovation paradigms success was mainly a result of centralized knowledge. Despite scientific discoveries of famous scientists like Einstein, Maxwell, Curie, the science believed that there is no additional benefit from the practical use of its inventions.

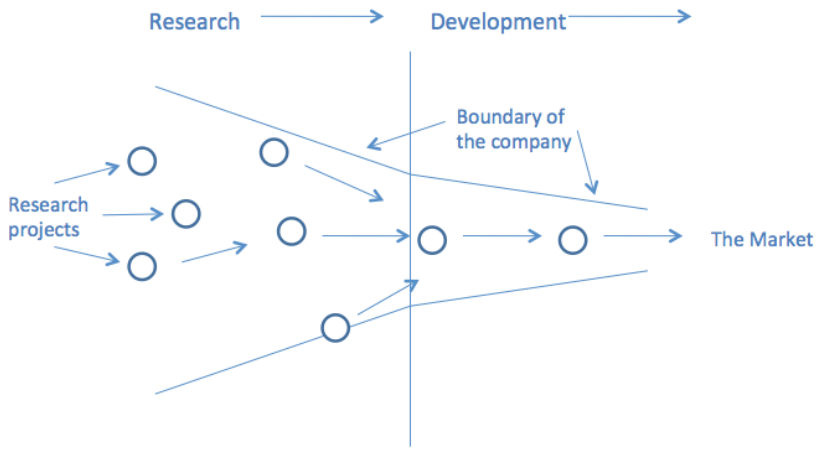
1.1.4.2 Closed innovation

In the past universities produced knowledge that seemed to be promising but companies were unable to relay on this know-how since universities were short of financial funds to transfer this knowledge into practical experiments (Salter & Martin, 2001). In addition, governments did not offer such support to research programs as they do nowadays. As a consequence companies became the source of practical R&D programs (Bozeman, 2000; Wallsten, 2000).

If new technology was not developed within the company, the company was not sure of its quality and performance (Chesbrough, 2003a). This kind of corporate behavior can be described by the term Not Invented Here (or NIH syndrome), which is used to describe persistent social, corporate or institutional culture that avoids using or buying already existing products, research or knowledge because of their external origins. In other words, individuals and organizations continue to ignore existing solutions to problems. Katz and Allen (1982) conducted the original research about the NIH syndrome. In many cases NIH occurs as a result of fear through lack of understanding, an unwillingness to value the work of others. Often NIH is a consequence from a lack of research, which would establish whether a solution already exists. According to this, Chesbrough (2003a) presented a figure that illustrates the closed innovation model for managing R&D. The closed innovation model is also called stage-gate model (Tidd, 2005).

With the closed innovation model, a company creates, develops and markets its own ideas. For almost the entire 20th century this philosophy of independence dominated the R&D of several industrial companies. In Figure 2 the solid lines represent the company's outside boundaries, which are in the form of a funnel. In this model, ideas are generated within the company's R&D department (on the left side of Figure 2 – "research projects") and exit out to the market on the right side of Figure 2 ("the market"). All new ideas and concepts are narrowed down to those that represent the best fit to the companies' business model. They are later transferred into further development and after that taken to market.

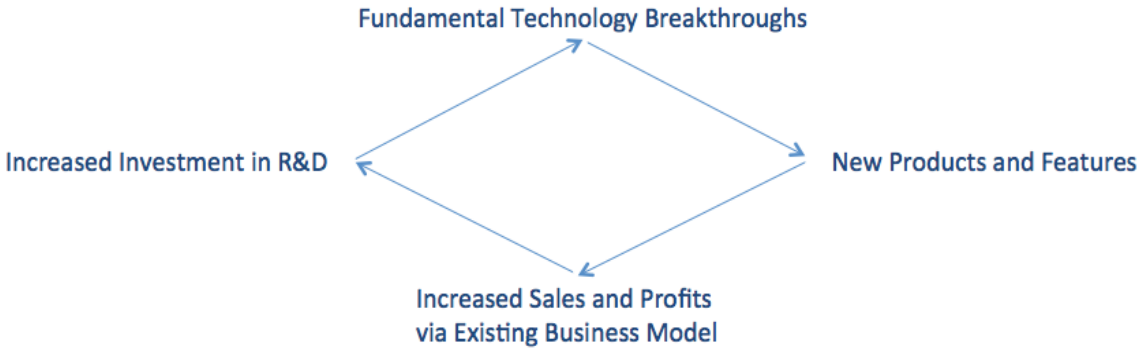
Figure 2: The closed innovation funnel



Source: H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, 2003a, p. 30.

Despite several ideas, few of them were obtainable outside the company borders. The company's R&D was self-sufficient and sustainable. The traditional model of closed innovation has been based on a virtuous circle (Simmie, 2003; Bessant, 2005). Companies invest in internal R&D and create several revolutionary discoveries. They put new products and services to the market, realize more sales and higher margins. Later it reinvests in internal R&D, which lead again to further breakthroughs closing the virtuous circle (Figure 3) (Chesbrough, 2003a).

Figure 3: The virtuous circle of internal R&D



Source: H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, 2003a, p. 31.

According to Gassmann (2006) the nuclear and military industries are typical examples of closed innovation industries. In these sectors, the protection of intellectual property is extremely high; start-ups are rear and venture capitalists make little investments. In many other industries, though, the logic underlying the closed innovation paradigm has become fundamentally obsolete.

1.1.4.3 The transition from closed to open innovation

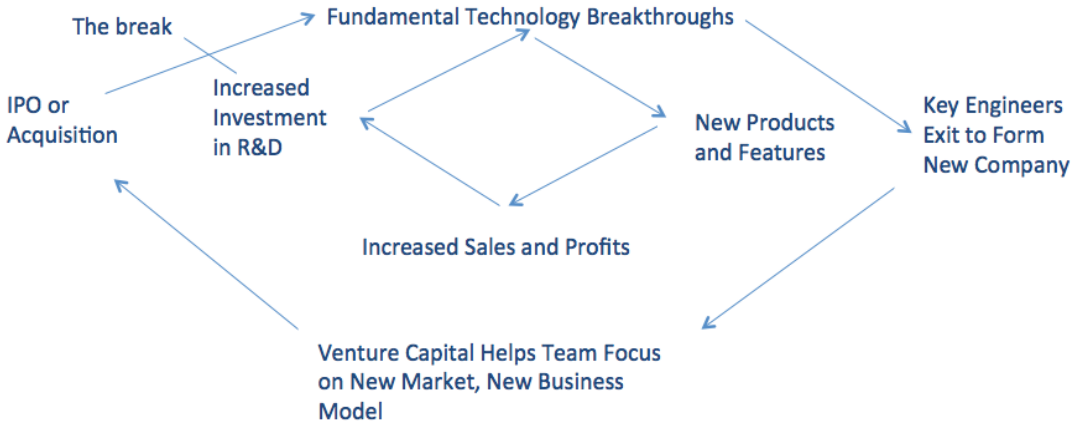
Several factors have changed the legitimacy and effectiveness of this paradigm background (See Figure 4 on the following page). Firstly, the extreme change in the knowledge setting has been vital for creating new ways of thinking. American higher education system was decentralized; state schools were sponsored and funded by government in order to focus on science and technology. As a consequence, universities enlarged the pool of qualified engineers and scientists (Kerr, 2001). Due to the excellent public universities' reputation and career incentives, a large number of employees left their company and continued in various graduate or post-graduate courses. This enabled know-how to spill out of internal R&D labs to other companies as well as customers, partners and universities (Rothmann Bowen & Finche, 1997; Chesbrough, 2003a).

Secondly, the U.S. immigration policy also played an important role in attracting foreign experts. They have been revolutionizing for the U.S. economy after the 1980's. A further factor has been the growing presence of private venture capital, which played a vital role in setting up start-ups. According to Chesbrough (2003a, p. 37) "the ability of companies to attract other

talented staff to the new venture was impaired by the lack of adequate capital to justify the risk of leaving a well capitalized company for an un-known start-up company".

As a result of the above-mentioned factors (availability and mobility of experts, and venture capital), innovative paths to markets are becoming crucial for several companies. The new accepted belief was that if a company's R&D cannot use a new breakthrough; it should find other paths outside the company's boundaries (potential markets, which the company may not be able to enter may exist).

Figure 4: The virtuous circle of internal R&D broken



Source: H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, 2003a, p. 31.

All these factors have softened the connection between research and development in the closed innovation paradigm. Today, the available knowledge offers new inputs from outside the company. Such concepts could be brought into the company and turned into successful outcome. Chesbrough (2003a, p. 40) said, "What previously was a fundamentally closed, internal environment (where the firm can create ideas in order to use them) has now transformed into an open environment (where the firm can create ideas for external and internal use, and the firm can access ideas from the outside as well as from within)".

In recent years competition is primarily based on knowledge and companies have started to manage their knowledge foundation as a strategic advantage. Closed innovation is no longer sustainable after the before-mentioned factors took place (Chesbrough 2003a; Mayle, 2006). Gassmann (2006) believes that do-it-yourself mentality is outdated and the virtuous circle of R&D is disconnected.

1.1.4.4 The differences between open and closed innovation

In order to understand when it's more appropriate to continue using the closed innovation model or when it's time for a company to start using the open innovation model, we should first define the main differences between both models. One of the most important differences

between the closed and open innovation model is in how companies monitor their ideas (Christensen, Olesen & Kjær, 2005; Chesbrough, 2006).

In every R&D process, managers and scientists should choose only the best ideas. Both models, the closed and open innovation model, will eliminate ideas that do not fit best with the company's strategy. In addition, the open innovation model also includes the ability to rescue ideas that were recognized as false negative (like projects that were not the most promising but they turned out to be extremely valuable). If a company is concentrated too internally and uses a closed innovation approach, it is likely to miss a number of opportunities. It could be extremely painful for companies to discover later that some of the abandoned projects had extreme commercial value (David & Rullani, 2008).

Table 3: Comparison between open and closed innovation

Closed innovation	Open innovation
The smart people in the field work for us.	Not all the smart people in the field work for us. We need to work with smart people inside and outside the company.
To profit from R&D, we must discover it, develop it, and ship it ourselves.	External R&D can create significant value: internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to the market first.	We don't have to originate the research to profit from it.
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our intellectual property, so that our competitors don't profit from our ideas.	We should profit from others' use of our intellectual property, and we should buy others' intellectual property whenever it advances our business model.

Source: H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, 2003a, p. xxvi.

In recent years it has become clear that companies do not innovate completely by themselves but they often cooperate with external partners. As mentioned before, open innovation process is an integral part of companies' innovation strategy and business model (Chesbrough, 2003a). According to this process, it is extremely important to import knowledge and share innovation with company's partners. All recent innovation models stress the importance of openness and inclusion of partners in internal R&D (OECD, 2008).

2 OPEN INNOVATION

Two decades ago there were more economies of scale in R&D than there are today because of the increasing costs of development and shorter life cycles of products (Chesbrough, 2006; Chesbrough & Appleyard, 2007; Gassmann, Enkel & Chesbrough, 2010). As a result, a new cooperative approach is emerging as an alternative to the closed model. This new approach was named by Chesbrough and is called "open innovation".

Although the term open innovation has become more popular in recent years, it is not a new phenomenon. Its recent popularity is partly due to the "open-source software movement" and its "hacker ethic". According to Levy (1984) at the beginning of the computing era, programmers pursued hacker ethics, which was based on principles of society, openness, sharing and performing globally. The open-source movement is defined as a worldwide movement, including people who believed the best way to create sophisticated and bug-free software is to include interested and skilled programmers who are willing to work for free. These programmers were motivated by two goals – creating high-quality programs and working with other similarly minded people (Lerner & Tirole, 2001). The open-source movement is important because of the impact it has had on the software market and because it represented a laboratory with mass collaboration. Chesbrough, (2003a) believes that based on this it can be considered as a case of open innovation.

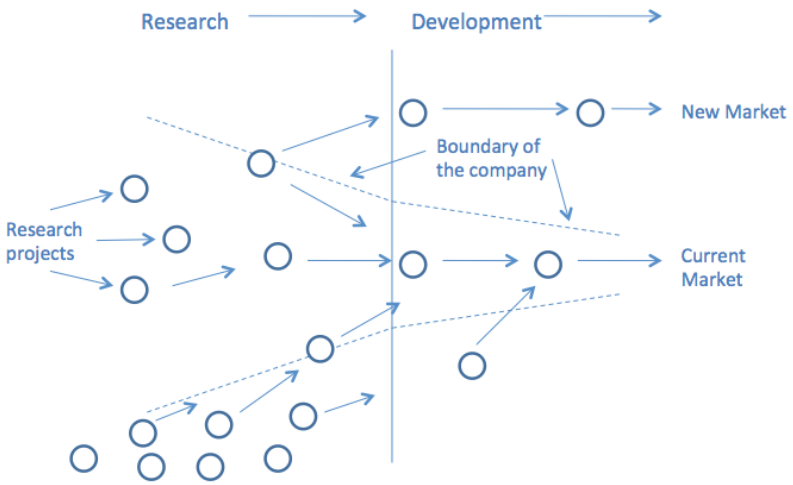
Chesbrough (2003a, p. xxiv) claims: "both external and internal ideas are used to create value, and internal mechanisms are defined to claim some portion of that value". According to the open innovation model internal ideas can be transferred to the market through external channels, outside the boundaries of the company, to generate additional value. Ideas can also start outside the company's own R&D and can anyway transfer inside.

In an open innovation funnel (Figure 5 on the following page), new ideas can still come from the company's R&D. However, some concepts may originate from the outside and be included in the R&D process anyway. According to Chesbrough (2003a, p. xxvi) "not all the smart people work for us". Companies need to work with intelligent people from inside and outside the company. External R&D on one side can create significant value whereas internal R&D on the other side is needed in order to request a segment of that value (Gerybadzea & Reger, 1999). Companies do not have to initiate the research to profit from it. Creating a more appropriate business model is better than getting to the market first (OECD, 2007). If companies find a good combination of internal and external ideas, they can win. They should profit from external use of their knowledge and should buy external knowledge whenever they advance their business model.

In Figure 2, the solid lines characterize the company's borders, while in Figure 5 (on the following page) these lines are dotted. Such line represents more transient border. These new business opportunities from the outside of the boundary may come from start-ups, external licensing, etc. In addition, some research projects may become more valuable in a new market than in the current market. Since today everything is more open and flexible it is possible that some projects will find greater value in these new markets.

There are some industries that have been using the open innovation model for a long time, like: the Hollywood film industry (innovated for years through a network of partnerships and alliances among production studios, directors, talent agencies, actors and scriptwriters), modern investment banking (using external ideas as well, adopting new and exotic investment instruments). Nevertheless, many sectors are in transition between both models, the open and closed innovation model: automobiles, biotechnology, pharmaceuticals, healthcare, computers, software, communications, etc.

Figure 5: Open innovation funnel



Source: H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, 2003a, p. 32.

We should still keep in mind that not all modern technologies developed in advanced, high-tech scientific laboratories are always the most appropriate solutions to local needs and problems. Technological innovation must be seen as a social process, in which the social factors play as important role as the market in formulating user demand.

Although some companies already embraced the open innovation concept, we still do not completely understand the processes from inside and outside of the organization. What is more, we need to find out when and how to completely profit from the concept (Enkel, Gassmann & Chesbrough, 2009).

2.1 The core open innovation processes

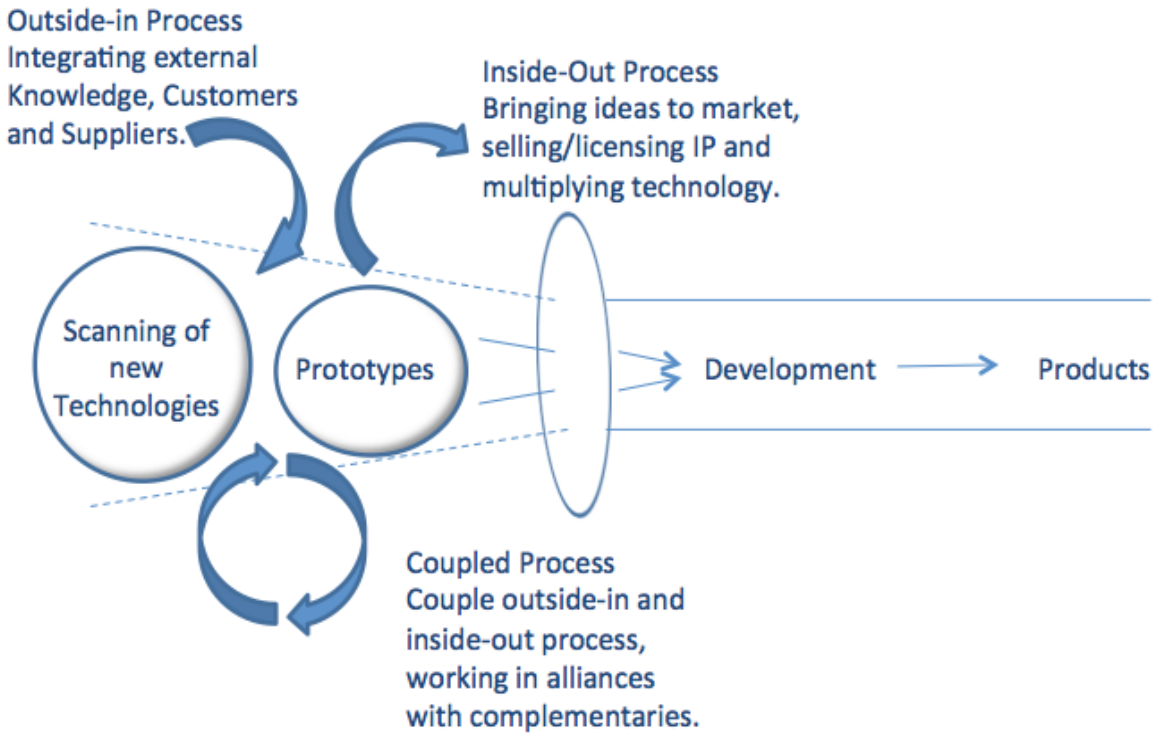
The main difference between the closed and open innovation paradigm lies in fact that companies, which are using the open innovation paradigm interact with external partners. Major reasons for shifting from closed to open innovation are workers' increasing availability and mobility as well as external suppliers' increasing capability (Chesbrough, 2003a). External options available for ideas and venture capital have created new opportunities for companies. Companies can integrate external knowledge by using the outside-in process in order to increase their innovativeness or they can use the inside-out process in order to license knowledge and technology to exploit them outside the firm. Figure 6 describes this basic principle of the open innovation approach.

According to Gassmann and Enkel (2004) the three core open innovation processes are:

– The **outside-in process**. Enhancing the company's knowledge with integration of suppliers, customers and other external knowledge sourcing can improve company's innovativeness.

- The **inside-out process**. The company is earning profits by bringing new ideas to market, selling intellectual property and improving technology by transferring ideas to the outside environment.
- The **coupled process**: The company uses the combination of both; it is coupling the outside-in and inside-out processes by working in alliances with complementary partners. In such partnerships give and take is crucial for success.

Figure 6: Three archetypes of open innovation processes



Source: O. Gassmann and E. Enkel, Towards a theory of open innovation: three core process archetypes, 2004, p. 7.

2.1.1 Outside-in process

If a company chooses the outside-in process as its core open innovation approach it means that this company decides to invest in collaboration with suppliers and customers. A company can actualize this by integration of customers and suppliers, spreading innovation across sectors, purchasing intellectual property, etc.

A great example of a company that uses the outside-in process is IBM. It invests in relationships with customers, suppliers and others. One of the main objectives is to gather external knowledge in research projects and get partners for joint ventures. Another well-known example is Cisco. It invests in start-up companies and monitors their innovations. Cisco evaluates their acquisition potential, directs the company development towards Cisco standards and compatible products (Gassmann & Enkel, 2004).

Integrating suppliers and customers into a company's internal process is not a new approach. Early supplier involvement is generally defined as a form of vertical cooperation in which manufacturers involve suppliers at an early stage in the product development and innovation process (Bidault, Despres & Butler, 1998). Suppliers can improve the product by contributing their knowledge and capabilities to innovate and develop new products. Increased competition on the market and customer demands for continuous improvement and development of new products have put innovation in almost every company's strategy. Supplier inclusion is one way of getting strategic flexibility with reduced costs, improved quality, shorter product life cycle and access to innovative technologies that can help firms gain or capture market share (Handfield, Ragatz, Petersen & Monczka, 1999).

A well-known case of supplier inclusion is the Danish company Coloplast. It develops, and produces medical disposables (highly sophisticated adhesive). Coloplast is active mainly in niche markets with few big suppliers. The majority of suppliers provide only raw materials, but some of them also provide their unique R&D capabilities. Suppliers are involved in the early stages of new product development, like cooperation in production of a sterilized catheter for use in hospitals. In this exact case, Coloplast is responsible for the development of the lubricant in which the catheter is kept sterilized and supplier is responsible for the development of the catheter. It is a great example of cooperation, where Coloplast is not very dependent on its suppliers for knowledge (Tidd & Bessant, 2009).

Empirical studies have established that customer integration increases a company's potential for innovation (Urban & Von Hippel, 1988). Among several advantages of early customer integration are: it leads to a stronger relationship with the partner, a better understanding of market needs, fewer errors in the early development process, and a better product quality. Customers can provide first-hand information regarding their needs, they can help create innovative ideas for new products and provide feedback regarding concepts and prototypes (Enkel, Kausch, & Gassmann, 2005).

Early customer integration in product development is broadly debated in theory, but it is not as extensively researched (Brockhoff, 2003). Henkel has formed representative survey groups to obtain ideas directly from customers about their needs and to rank these needs. With processes like these customers moved from being passive in the 1970s and early 80s towards playing a more active role in the 21st century (Gassmann & Enkel, 2004).

To sum up, suppliers and customers should be integrated as valuable sources of knowledge and competence that are needed for product development. Other potentially valuable sources of external knowledge in new product development are intellectual property, licensed patents and technological knowledge gained by linking the company to regional innovation clusters.

2.1.2 Inside-out process

A company chooses the inside-out process when it wants to bring ideas to the market faster than it could with just internal R&D. In order to successfully collaborate with others the company needs to license intellectual property or technology. Commercialization of ideas in different sectors and focusing on the inside-out process can drastically increase companies' revenues. Two great examples of the inside-out process are Novartis and Pfizer – two pharmaceutical companies that are well known for substances that were initially developed for treating one illness, but became better known when used for other ailments. A similar example is the case of Botox. Its initial task was a nerve toxin, however today it is used to reduce wrinkles in beauty therapy. Outsourcing knowledge to the external environment includes the acquisition of knowledge on a market and the licensing of technologies from a second party. Gassmann and Enkel (2004) believe that major advantages of outsourcing include access to new, complementary knowledge, more flexibility in capacity, increased speed, etc.

Management of intellectual property mainly stands for patent management. According to Ernst and Omland (2003) there is evidence of patent management's influence on a company's success. They point out the financial advantages of making money through a license. Schindler is an illustrated example of licensing patents to other industries in order to improve its technology. They developed new cables to replace existing elevators' steel cables. These new cables contain carbon fibers and they enable remote identification and support elevators' service and safety. The patents for non-elevator applications have been sold for $6 million and with that they financed the whole R&D project (Gassmann & Enkel, 2004).

Two different approaches within the inside-out processes are (Gassmann & Enkel, 2004, p. 11): "(1) leveraging a company's knowledge by opening the company's boundaries; and (2) gaining advantages by letting ideas flow to the outside". Companies that decide on the inside-out process as their primary innovation approach are in majority research-oriented companies. The goal of such companies is to decrease the fixed costs of R&D and share the risks of outsourcing parts of its process (Herzog, 2007). Another common reason to concentrate on this process is branding. This is rational, if there are core competencies for development and commercialization but there is no brand for products in the target market (Hart & Simanis, 2009).

The desire to set technological standards can be expressed due to technology outsourcing or for being a partner and sharing new technology and knowledge in the value chain. According to Hart and Simanis (2009) spillovers are also positive side effects of an inside-out process as an innovation strategy. They can be successfully commercialized in other sectors.

These innovations across different sectors occur when companies license technology, which is already established in their own sector but is new to others (Gassmann & Enkel, 2004). An illustrated example could be processors. They are old technology in the information technology sector but they could be integrated successfully into cars, etc. where lifecycles of products are longer and the speed and processor capacity demands are lower than in information technology.

2.1.3 Coupled process

Coupled process consists of both, the outside-in and inside-out process. The outside-in process helps companies gain external knowledge and the inside-out process assists in bringing new ideas to the market. If companies want to be successful, they need to collaborate with external partners (Conboy & Morgan, 2010). The cooperation of Canon and HP is a great example. They joined forces and developed printers. Another example is Boeing 777 aircraft, which was developed in collaboration of companies from seven countries. Major benefits of this approach are intensive exchange of knowledge and a mutual learning process.

In order to cooperate successfully, a give and take of knowledge is essential; therefore a coupling of the outside-in and inside-out processes is key for success. Cooperation refers to the combined development through relationships with complementary partners, such as clustering within the whole value chain: competitors, suppliers, customers, joint ventures, universities, etc. (Gassmann & Enkel, 2004). Cooperation between universities and companies is an important instrument, by cooperating with each other these two institutions split the costs and share the risks. Cooperative research allows for bigger investments in the development and research of new technologies. However, we should keep in mind that development time does not reduce with such cooperation (Veugelers & Cassiman, 1999).

The transfer of research into knowledge through alliances and joint ventures is a relatively recent phenomenon. Biotechnology especially has seen a major input for pharmaceutical R&D. Worldwide pharmaceutical and biotechnology firms have formed 400 to 500 new alliances every year since 1996 (Gassmann, Reepmeyer & Von Zedtwitz, 2004). As a result of intensive cooperation between strategic alliances, it is not unusual for pharmaceutical companies to have biotechnology holdings (Novartis is an important owner in Chiron, Lek etc.).

Technology providers need to work with the industry in a strategic alliance, if they want to ensure that their new technology will be implemented in new products. An example of this is the mobile industry with its new mobile phone generation. New technologies like polyphone ringtones can only lead to high profits when the majority of telecom companies (Nokia, Apple, Samsung, Sony etc.) implement them. Cooperating companies know that major factor for successful cooperation is the right balance between give and take. Gassmann and Enkel (2004) believe that it is extremely important to integrate external knowledge into a company's own knowledge for working in collaborative innovation processes. In addition, the success of the company is based on its ability to find the right partner, with the knowledge needed to gain a competitive advantage in its own industry (Sousa, 2008).

To sum up all three core open innovation processes and understand the main differences between them see the Table 4 on the following page.

Table 4: Characteristics and companies examples of core open innovation processes

Outside-in process	
Characteristics	**Companies examples**
– Low tech industry for similar technology acquisition – Act as knowledge brokers and/or knowledge creators – Highly modular products – High knowledge intensity	– Earlier supplier integration – Customer co-development – External knowledge sourcing and integration – In-licensing and buying patents
Inside-out process	
Characteristics	**Companies examples**
– Research oriented company – Goal of decreasing fixed costs of R&D, branding, setting standards	– Bringing ideas to market – Out-licensing and selling intellectual property – Improving technology through different applications
Coupled process	
Characteristics	**Companies examples**
– Standard setting (pre dominant design) – Increasing returns – Alliance with complementary partners – Complementary products with critical interfaces – Relational view of the company	– Combining outside-in and inside-out processes – Integrating external knowledge and competencies and externalizing own knowledge and competences

Source: O. Gassmann and E. Enkel, Towards a theory of open innovation: three core process archetypes, 2004, p. 12.

2.2 Critical elements in favor for and against open innovation

Technological changes, globalization and all other changes require companies to be open to external ideas in order to stay competitive. As already mentioned, product life cycles have been shorten, which forces companies to innovate, research and develop more quickly. Due to higher technology integration innovation has become more expensive and risky. As a result of all of these market changes, companies need partners with complementary knowledge (Turman, 2006, p. 130).

When academics and practitioners talk about open innovation they all have in mind its advantages. However, we should keep in mind that companies will face additional challenges and new risks when opening up their innovation process. A major threat of open innovation for a company is to lose control of its own technology, as it leaks out to partners. A very important threat is also company's culture – open innovation can be hard on employee relations and collaboration can be anything but efficient. Employees should understand that not everything needs to be created within the firm and that good idea can also come from outside the firm. Companies should profit from others' use of its innovation process and they should buy others' intellectual property whenever it advances their own business model (Lindegaard, 2009).

Three fundamental challenges for firms in applying the concept of open innovation (West & Gallagher, 2006, p. 1) are: "(1) finding creative ways to exploit internal innovation; (2) incorporating external innovation into internal development; and (3) motivating outsiders to supply an ongoing stream of external innovations".

One of the main concerns of open innovation is how to maximize returns to internal innovations. Companies need more than just the development of products, they also need to generate innovations that create returns by external commercialization (outbound licensing of intellectual property), patents and even giving away technology to stimulate demand for other products that does not produce direct economic benefit but indirectly generates a return through spillovers or sale of related goods and products (West & Gallagher, 2006).

The existence of external knowledge does not provide benefits to the company, if the company cannot identify the relevant knowledge and incorporate it into its innovation activities; therefore companies need to incorporate external innovation. Motivating individuals to generate and contribute their intellectual property in the absence of financial returns is a management challenge for open innovation (West & Gallagher, 2006).

Open innovation on one hand provides several advantages but on the other it increases risk. To reduce it, a company should consider partnerships, resource management and the concept of intellectual property. Companies are seeking for open, diversified, agile organizations with calculated risks. All these factors are shaped by open innovation principles, where complex problems offer solutions with the help of new information and communication technologies (West & Gallagher, 2006).

But in cases when companies find themselves in risky situations (like corporate venturing), open innovation has to offer four main advantages (Vanhaverbeke, Van de Vrande & Chesbrough, 2008, p. 251): "(1) benefits from early involvement in new technologies or business opportunities; (2) delayed financial commitment; (3) early exits reducing the downward losses; and (4) delayed exit in case it spins off a venture".

Innovating companies can participate in several externally developed inventions by purchasing smaller stakes in start-ups, involving themselves in venture capital funds, or by investing in universities' or research institutions' projects (Fredberg, Elmquist & Ollila, 2007). With these strategies they can quickly learn about new technologies and at this point capital investments are still minor and adjustable, if investing companies prefer to exit. In addition, investing companies can come across some interesting ideas. Open innovation gives them an opportunity to examine plenty of available technologies and developments (Janney & Dess, 2004).

The second important advantage of innovating companies is delayed entry – meaning delayed financial commitment. In comparison with closed innovation, where firms can only develop idea internally and then push them through the funnel, in the open innovation process companies have higher flexibility regarding the beginning of the innovation process. The power to postpone the investment provides a company with the possibility to consider several

entry options at the beginning. Some of them prefer to examine technologies and ideas at the beginning, whereas others prefer to invest in technologies at a later stage. At later stage the uncertainty level decreases and future market potential of the new venture becomes more predictable (Vanhaverbeke et al., 2008; Fredberg et al., 2007).

In addition, companies can exit early and still receive some value from projects that are later not carried out internally. When innovating openly companies have the option of licensing or selling technologies that are not showing enough potential or do not correspond with their strategy (Janney & Dess, 2004).

And finally, open innovation also permits the company to take advantage of delaying an exit. A company can screen its developments while delaying the decision whether to exit. With some additional time, the company can more simply decide whether to stay in the venture or whether to sell the venture to other venture capitalists. The company makes this decision based on its strategy and the commercial success of the new venture. If the company decides to stay in the venture and invites other external investors in, the company can also benefit from their investment. If the firm decides not to stay in the venture, it can still take advantage of control and delay their exit. Delaying the exit is strategically interesting only if the aftermath represents a potential threat or if technological and market uncertainty make the decision regarding the strategic value of a particular technology difficult (Vanhaverbeke et al., 2008). Table 5 represents some major pros and cons of open innovation.

Table 5: Potential advantages and perils of open innovation

Opportunities and Advantages	Threats and Perils
– Getting new ideas. – Finding new partners or employees. – Conducting some early market research. – Innovation can come from anywhere and anyone. – Some of the best ideas come from outside the company. – Pre-selling before the product launch – letting the market tell the company what they want. – Saving money – lower the company's R&D and operating costs. – Reducing the risk of innovation – less risk guessing what the market wants. – Shared intellectual property can create a tough barrier to entry. – Speed-up time to market.	– Possible loss of control of its own technology. – Employee relations and collaboration can worsen. – Increase the risk of leakage of proprietary knowledge and involuntary spillovers. – Intellectual property theft. – Extra costs of managing co-operation with external partners. – Dependence and possible over-dependence on external partners. – Potential opportunistic behavior of partners.

2.3 The context of open innovation in practice

It seems that open innovation is a term that is increasingly gaining attention but it is not frequently used in practice. Interestingly, the results of the study made by Van de Vrande and de Man (2010) suggest that knowledge, which has been obtained from outside is not appreciated as much as knowledge that has been developed within the company. However, some exceptions to this exist, as is the case of the U.S. Since the publication of Chesbrough's book open innovation is a term widely embraced by an increasing number of businesses in the U.S. There is a rising interest in university-industry relationships, encouraged, partially, by the concept of open innovation. Indeed, industry support for academic research increased from 2004 on and was $2.4 billion in 2006 (Cunningham, 2008).

In Slovenia, debate about the open innovation context is mainly limited to academic circles (Cunningham, 2008). According to a study made by Rangus (2010) only a few Slovenian companies innovate openly. What is more, the majority of the participating companies had not yet heard about the concept of open innovation. Although some of the respondents were micro companies, still they hardly ever cooperate with external stakeholders. Rangus believes this could be a result of: (1) fear before stealing technology; (2) lack of knowledge about the concept of open innovation; or (3) the closed nature of Slovenian people.

3 THE CONTEXT OF THE BUSINESS ENVIRONMENT FOR FOSTERING OPEN INNOVATION WITHIN AND AROUND COMPANIES

Evidence from the past identifies innovation as the main driver for companies to prosper, grow and sustain high profits (Drucker, 1988). This means that the main question is no longer why innovation is important but the focus lies on how to innovate and how the innovation processes can be managed (Gassmann et al., 2004).

The formula for business success requires two basic elements – the company (including individuals) and the environment. If either of them is missing, the success becomes impossible (Aguilar, 1967). The term business environment indicates internal factors and those external forces and institutions that are beyond the control of individual companies but they still affect its business (Stead, Worrell & Stead, 1990). These forces can affect the business directly or they can have an indirect effect on it (Miller, 1988).

The above-mentioned forces can be specific or general. Specific forces influence companies directly and immediately, while general forces have impact on all companies within a certain industry or even country and thus may influence it indirectly (Ruff, 2006). Because these forces can constantly change, the business environment is dynamic and it keeps on changing. Changes can occur in terms of technological revolution, government policies, shifts in consumer preferences, new substitutes or entry of new competitors (Miller, 1988).

Since it is very difficult to predict future changes, especially when the environment varies too frequently, the business environment becomes uncertain and the risk for companies increases. Sectors with extremely big business environment changes are information technology and fashion industries (Milliken, 1987; Koberg & Ungson, 1987). Business environment can be further divided into internal and narrower and broader external environment (Kanter, 1985).

3.1 Internal environment

The internal environment is the environment that has a direct impact on the business. It includes factors over which companies normally have control. Academics have searched for key elements that can affect company, including internal organizational factors such as: company's strategy and values (Sathe, 1985), organizational structure and staff capability (Covin & Slevin, 1991; Naman & Slevin, 1993), and management structure, support and systems (Stevenson & Jarillo, 1990; Kuratko, Hornsby, Naffziger & Montagno, 1993; De Jong & Den Hartog, 2007). The important internal elements, which influence strategy and other decisions of internal organization, are discussed in Table 6.

Table 6: Elements of internal business environment

Internal element	Considerations: strengths or weaknesses
Strategy	Does a company have a clear strategy (vision, mission)? Has a company planned for the long term, medium term and short term? Does a company have performance indicators?
Values	What values does a company possess? Do company's values include: creativity, innovativeness, confidentiality, trustworthiness, etc.? Do employees share these values?
Structure	Does a company have an organizational structure? Is it formal or informal? Is it the right and the most appropriate structure for your business and for promoting innovativeness?
Human resource	Does a company have the appropriate number of employees? Does staff have high morale, commitment towards work, suitable attitude, are they creative, innovative?
Skills	Does a company have qualified (proper skills) staff? What skills, competencies and expertise do a company's human resources have?
Systems and support	Does a company have Monitoring and Control Systems? Does a company encourage employees to engage in innovative behavior? How does a company encourage employees to engage in innovative behavior?
Physical and financial assets	Does a company have financial resources and technology (R&D), which enable and encourage innovativeness and competitiveness?

Studies from practice showed that well-educated and qualified scientists and engineers and highly educated managers with appropriate styles of leadership are some of the most important internal elements for innovative activity (LeBlanc, 1997; Hoffman, Parejo, Bessant & Perren, 1998; Radas & Božić, 2009). Other crucial internal elements linked to innovation

efforts are also access to appropriate technologies (Docter, van der Horst & Stokman, 1988; Oerlemans, Meeus & Boekema, 1998), investments in R&D (Birchall, Chanaron & Soderquist, 1996; Oerlemans et al., 1998), company's values and planning for the future (Birchall et al., 1996; Carrier, 1994).

3.2 External environment

External environment refers to the environment that has an indirect influence on the business. These are all elements that a company cannot control. A company as an open system interacts with environment around it and becomes dependent on it. This interaction challenges managers to respond creatively and act in innovative ways (Zahra & O'Neil, 1998). They have to constantly adjust to changes and quickly respond to them in order to survive. Environmental changes define the necessary modifications of upcoming products or services (Husna & Idris, 2010).

External environment comprises the main source of information for innovation improvement and company's opportunities and threats as it contains numerous elements, which can influence companies (Damanpour & Schneider, 2006; Hashim, 2005). Elements of external environment (market structure, technology dynamics, market growth) are vital for product and process innovation (Lysonski, Levas & Lavenka, 1995). What is more, environmental uncertainty demands organizational flexibility. Thus, companies must understand their environment in order to remain competitive and innovative (Husna & Idris, 2010).

There are two perspectives on the external environment, namely the narrower external and the broader external environment.

3.2.1 Narrower external environment

The narrower external environment is also known as the microenvironment, task environment and operating environment. The narrower external environment consists of elements from the company's direct environment, which affect the performance of the company. It includes the new entrants, substitutes, suppliers, competitors and customers (Porter, 2008). The microelements need not necessarily affect all the firms in a particular industry in the same way. When the competing companies from the same sector have the same microelements, the relative success of the companies depends on their relative effectiveness in dealing with these elements (Posner, 1961).

New entrants. When new companies are entering the industry they would like to gain as much market share as possible. This creates pressure on existing prices and costs. What is more, it requires additional investments from incumbents in order to be competitive. The threat of entry depends on the height of entry barriers and on the incumbents' reaction. If entry barriers are low and newcomers can expect little resistance from the incumbents, the threat of entry is high (Porter, 2008).

Entry barriers are advantages that incumbents have in comparison with new entrants. According to Porter (2008) the seven major sources of entry barriers are:

- **Supply-side economies of scale***:* companies that produce at larger volumes have lower costs per unit because they can spread fixed costs over more units, they can use better technology, or they can negotiate better conditions from suppliers.
- **Demand-side benefits of scale***:* buyer's willingness to pay for a company's product might increase with the increase in the number of other buyers who would also prefer to buy a product from the company.
- **Customer switching costs***:* switching costs are fixed costs that buyers face when they change suppliers. These costs arise because a buyer has to modify the product, processes or information systems.
- **Capital requirements***:* the need to invest large financial sources in order to compete can discourage new entrants.
- **Incumbency advantages independent of size***:* incumbents may have cost or quality advantages that potential new entrants cannot have (exclusive technology, access to the best raw material, most desired geographic locations, established brand name).
- **Unequal access to distribution channels***:* the more limited the wholesale or retail channels are by the incumbents, the tougher entry into an industry will be.
- **Restrictive government policy***:* government policy can intensify entry barriers with strict patenting rules, regulations, licensing requirements and restrictions on foreign investment.

Substitutes. According to Porter (2008, p. 31) "substitute performs the same or a similar function as an industry's product by a different means". The threat of a substitute increases if: (1) substitute offers an attractive price-value trade-off to the existing product or (2) if the buyer's cost of switching to the substitute is low.

Suppliers. An important force in the microenvironment of a company is the supplier. According to Porter (2008) powerful suppliers capture more of the value for themselves by charging higher prices, limiting quality or services, or shifting costs to industry participants. Collaboration with suppliers can contribute to improved innovativeness of the company (Kaminski, de Oliveira & Lopes, 2008; Massa & Testa, 2008) and may also have the goal to overcome size constraints (Lipparini & Sobrero, 1994; Radas & Božić, 2009).

Buyers. The most important and demanding task of a company is to obtain and sustain customers, since business exists only because of its customers. Powerful customers can enforce a decrease in prices and demand higher quality, which increases costs. Buyers are powerful if they have bargain power and if they are price sensitive (Coff, 1999). A customer is price sensitive if a product represents a significant cost for him/her. They have high negotiating power: (1) large-volume buyers are particularly powerful in industries with high fixed costs; (2) if the industry's products are standardized or undifferentiated; and (3) if there are low switching costs. Suppliers and customers usually collaborate with the purpose of co-design (Birchall et al., 1996; Meer, van der Trommelen, Vleggnaar & Vriezen, 1996; Docter & Stokman, 1988; Davenport & Bibby, 1999), whereas collaboration with customers is often a source of advancements in technology (Le Blanc et al., 1997).

Competitors. Competition not only includes the other firms that produce the same product but also those companies, which compete for the income of the same consumers. Rivalry among existing competitors occurs in several forms, e.g. price discounting, new product introductions and advertising campaigns. High rivalry limits the profitability of an industry. The intensity of rivalry is according to Porter (2008) greater if there are many competitors or they are similar in size and power and if exit barriers are high. Another factor that can increase competition among existing competitors is price competition. Price competition is more probable if products or services of rivals are very similar and there are low switching costs for customers.

3.2.2 Broader external environment

A broader external environment is also known as macro-environment, general environment and remote environment. Its elements are usually more difficult to control than microenvironment elements (Grossman & Krueger, 1995). If a company losses its control over macro-elements, the success of the company depends on its adaptability to the environment. The analysis of a broader external environment is the second part of the external analysis when preparing strategic analysis. It is a useful strategic tool for understanding market growth or decline, business position, potential and direction for operations. A broader external environment includes a political, economic, social and technological environment (Abea, Suzuki, Etoh, Sibagaki & Koike, 2008).

Political Environment. The political environment explains the way a government intervenes in the economy and to what extent. The political environment is influenced by different political organizations such as political parties. It can influence companies to a great extent with different regulations, policies, etc. (Daft, Sormunen, & Parks, 1988; Healey, 1994).

Economic Environment. An economic environment is the cumulative of the nature of the economic system of the country, business cycles, the socio-economic infrastructure etc. (Daft, Sormunen & Parks, 1988). Elements of this environment have a huge influence on a business's operations, decision-making and success (Healey, 1994).

Social Environment. The social environment defines the value system of the society, which determines the demand for a company's products and the business performance (Healey, 1994). In addition, as a consequence companies may change some management strategies in order to acclimatize to these social trends (Daft, Sormunen & Parks, 1988).

Technological Environment. The technological environment is extremely important for a country's development (Healey, 1994). The technology that is used by companies determines the type and quality of goods and services to be produced (Daft, Sormunen & Parks, 1988). The technological environment impacts companies in terms of investment in technology and the effects of technology on markets (Ford & Slocum, 1977).

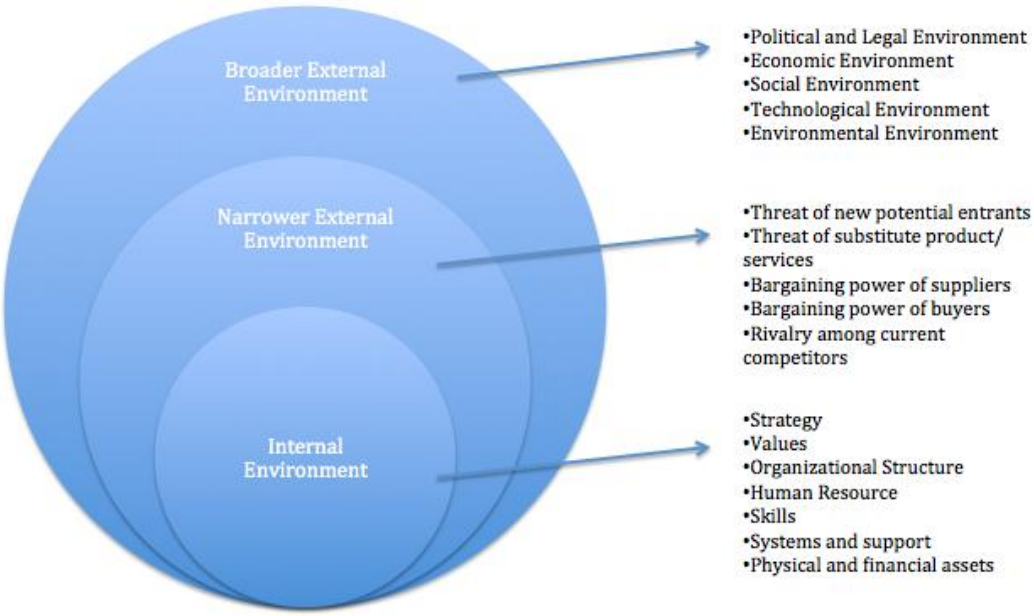
Some of the external environment elements are discussed in Table 7 on following page.

Table 7: Elements of external business environment

External element	Considerations: opportunity or threat
New entrants	– Is there a threat of new entrants or are entry barriers high? – Is it possible to increase the entry barriers with increased innovation?
Substitutes	– Are there any substitutes for company's products? – If there are could a company produce a new innovative product?
Suppliers	– How much power do company's suppliers have?
Buyers	– How much power do company's buyers have?
Competitors	– How much competition does a company have and are exit barriers high? – Can companies differentiate with innovativeness?
Political Changes	– Government policies (tax policy, labor law, environmental law) – do they support open innovation? – Political climate, political stability. – Trade restrictions and tariffs.
Economic Changes	– State of economy. – Economic growth. – Interest rates. – Exchange rates. – Inflation rate.
Social Changes	– Population growth rate. – Career attitudes – do people invest in their education, do they prefer to innovate or do they prefer to follow?
Technological Changes	– New technologies –rate of technological change high (innovativeness)? – Availability of technology – company's access to new technology? – R&D activity – how much support does a company get from economy? – Technology incentives – does economy encourage innovation?

Open innovation has been recognized as one of the key factors of sustainable economic growth (Mehta & Mokashi-Punekar, 2008). Such economic growth can also be assured with a country's long-term economic and social development (Furman, Porter & Stern, 2002; Edquist, 1997).

Figure 7: Contextual variables of open innovation research model



4 A STUDY OF THE OPEN INNOVATION PARADIGM IN THE SLOVENIAN BUSINESS ENVIRONMENT

The Slovenian innovation system has been strongly influenced by the public R&D sector. In addition, the growing business investments in R&D and also a search for the most appropriate governance of innovation policy had a great impact on the innovation system (Bučar, Jaklič & Udovič, 2010). However, there are not enough investments in R&D sector and that is why approaches that reduce prices of innovation processes and enable better results on investment have enormous value. At this point, the concepts of open innovation in the Slovenian business context could play an important role.

In 2009 Slovenian companies invested 380,884,000 Euros in R&D, government 234,241,000 Euros, higher education 1,889,000 Euros and around 40,000,000 Euros were invested by private non-profit organizations and foreign countries (SURS, 2011). In addition, Slovenia will in 2011 invest 493,695,240 Euros in Slovenian research and innovation strategy. Barcelona target goal, as part of the Lisbon strategy for EU countries, is to invest 3% of GDP in science and development. One third (1%) of these investments should come from public funds and two thirds (2%) from the economy. Most EU members have not yet achieved this objective, whereas Slovenia plans to achieve the target public investment (taking into account current trends) in 2012 (MHES, 2011).

Slovenian catching-up with the EU average was interrupted by the financial crisis. Slovenian economic activity dropped more noteworthy than on average in the EU. According to GRS (2011) this was mainly caused by the strong investment cycle in the field of civil engineering and more importantly by structural weakness of the Slovenian economy. Slovenia has a relatively high share of low and mid-tech industries, which contributed to a more extensive decrease in export.

The current financial crisis has once again pointed out the existence of several market gaps, especially in financing innovation activities, technology and R&D (Rašković, 2009; Rašković & Moerec, 2010). According to OECD (2010) the innovation performance of the U.S. and Japan are significantly above those in the EU (Japan or U.S. are above the EU for 40%). However, the gap between them is decreasing, mainly towards the U.S. and slightly less toward Japan. What is important is that EU lags behind its competitors by key indicators for R&D and innovative activity, such as the business sector expenditure on R&D, researchers, patents, etc.

The World Economic Forum (WEF) placed Slovenia in the group of 35 so-called innovation driven economies (WEF, 2010). WEF ranked Slovenia according to innovation factors as 45th country out of 139 countries with score 3.7 on the scale from 1 to 7. Slovenian notable competitive advantages are especially capacity for innovation (ranks 22nd), quality of scientific research institutions (ranks 27th), company spending on R&D (ranks 32nd) and university-industry collaboration in R&D (ranks 37th). According to the WEF assessments, Slovenia's drawbacks are mainly insufficient development of its entrepreneurial clusters and insufficient direction of public procurements towards the support of technological innovation. There have

been some favorable changes made in the area of innovation and research, mostly in terms of the R&D funding, innovation, quality of research institutes and the number of registered patents but there is still a huge hole for companies to develop and grow. Open innovation could be a way to patch-up the current situation and achieve these goals.

The most recent data from the study Innovation Union Scoreboard for the year 2010 placed Slovenia on the tail of innovation followers (first group are innovation leaders, followed by innovation followers, than moderate innovators and finally modest innovators). Innovation in Slovenia falls behind the most penetrating countries within the EU-27, such as Sweden, Finland, Denmark and the United Kingdom (PRO INNO Europe, 2011). Miloš Ebner, director of strategic innovation at Trimo d.d., agrees (Martič, 2011) with these findings. He stressed out that Slovenia is regarding the innovation at the bottom of developed European countries. He pointed out the low value-added per employee in Slovenia, which accounts to 33,000 Euros and is less than the European average. According to Ebner, value-added per employee in Slovenia should be at least 50,000 Euros.

Slovenian companies are mostly low to medium-tech and so they are not developmentally and innovatively active enough. On global market they can mainly compete if there is though competition and consequentially also strong price competition. Another problem is in the structure of products where there is relatively small share of final, integrated products. Slovenian economy produces mostly individual components and assemblies. This means that several companies are able to control only certain parts of the innovation activities, with the emphasis on process and not so much on product innovation (MHES, 2011).

According to SURS (2011) in period 2006-2008, 35.1% of Slovenian companies were engaged in innovation activity. Within innovative companies 18.8% of them have introduced new or significantly improved product or service and 22.6% introduced process innovation. Both, product as well as process innovation, were introduced by 55.7% of companies. Another important fact is that in Slovenia manufacturing companies are more innovative than service companies. The share of innovative manufacturing companies was 41.2%, while there was only 26.8% of innovative service companies.

International organizations such as OECD assessed the Slovenian business environment as less liberal, meaning that in order to increase competition, the Competition Protection Office should become a completely independent agency. The country should in times of crisis find ways to improve the management of state-owned companies (OECD, 2011). As a result one of the key existing recommendations, from business society and OECD, for Slovenia is to improve business environment (Rebernik, Tominc & Pušnik, 2010).

The government will place research and innovation strategy at the heart of development policies and it will financially support them. Already in 2012, Slovenia will invest 1% of GDP in R&D and by 2020 1.5% of GDP. Increased development of Slovenian economy will be seen in higher technological composition of the national economy and higher value added per employee. This will be caused by technological as well as non-technological innovations. Consequentially, the competitiveness of the economy will raise. In addition, the future tax and

supportive environment will encourage new business investment in new, qualitative jobs (MHES, 2011).

In next sections I will examine the following aspects of the open innovation business environment: (1) internal business environment: strategy, values, culture, climate, organizational structure, human resources, management structure, support and systems; (2) narrower external business environment: supplier integration, cooperation with customers and research institutes; and (3) broader external business environment: political, economic, social and technological environment. I chose these elements since I believe they bring valuable insights into understanding how they influence open innovation in a company and they stress out the balance required in the system for successful open innovation performance.

4.1 The internal business environments of Slovenian companies

According to the theory the internal environment has a strong influence on business activity. Previous researches found out that following elements have significant influence on companies' success: strategy, values, culture and climate (Sathe, 1985), organizational structure and human resources (Covin & Slevin, 1991; Naman & Slevin, 1993), and management structure, support and systems (Stevenson & Jarillo, 1990; Kuratko, Hornsby, Naffziger & Montagno, 1993; De Jong & Den Hartog, 2007).

Flexible business environment that encourages ideas, respect, enjoyment and allows the risk is key to innovation. Corporate culture is a reflection of management, employees and values. The results of the research made by O.K. Consulting (2008) on organizational culture in Slovenian companies claim that participating companies on general identified the following: (1) focus on customer needs and their satisfaction; (2) alliance between colleagues: collaboration, knowledge sharing, transfer of information, support and trust between colleagues; (3) companies are focusing on the future, thinking on long-term; (4) employees have a high influence on their own work and important decisions at the enterprise level; (5) companies encourage innovation; (6) quickly adjust to changes; (7) employees receive proper feedback and are rewarded for their contribution.

When comparing the ranking of employees' personal values and corporate values there were no major differences. The most important values for participants are trust between colleagues and shared knowledge, experience. Research participants assessed that the least appreciated values in companies are internal competition, investment in below-average employees and thinking in a unique way. Overlapping of personal values and perceptions of corporate values is a good starting point for the staff commitment (O.K. Consulting, 2008).

According to Fatur and Likar (2009) Slovenian companies qualitatively develop and train human resources but unfortunately they do not make any differences between successful and less-successful employees. If a company does not make any differences, it will not be able to initiate the promotional motivational process. Staff education in Slovenian companies mainly includes training on the procedural level (implementation of procedures, processes) than on

conceptual level (creativity, teamwork). Employees are offered an innovation opportunity, but they are not supplied enough with tools, instruments to fully take advantage of this opportunity.

Companies' innovation teams are not the same as other teams because innovation process requires special skills and ways of thinking. Such skills and thinking can be encouraged with appropriate training and mentoring. The best ideas usually mature in diverse teams, consisting of workers of different ages, genders, races, abilities and experience. Every employee can offer different perspective on the problem. However, for the implementation of a new business idea that will develop into a successful project, a manager must allocate enough resources and time (Kostic, 2010).

Under the initiative of the Slovenian Chamber of Commerce a group of consulting companies in Slovenia prepared a project in which they researched and monitored organizational climate in Slovenian organizations, called SiOK. The project SiOK began in 2001. In 2008 a total of 98 Slovenian organizations participated in the research. According to SiOK (Biro Praxis, 2011) the highest scores were achieved by category Innovation and initiative. Employees in Slovenian companies are aware of the needed changes in the organization and it is expected from them (as well as managers) to make proposals for improvements.

The authors (Rašković, Pustovrh, Jaklič & Makovec Brenčič, 2011) of the study Financing small and medium sized high-tech companies in Slovenia, came to the conclusion that within selected internal elements the highest rating achieved: management support, training system and the organizational structure of companies and the most poorly evaluated internal elements in terms of their availability were: availability of internal human resources, employee mobility and innovation performance surveillance systems.

The different conclusions of both studies can be explained by the fact that the SiOK (2008) study was performed within companies of all sizes (from small to large companies), high-tech and low-tech companies, whereas the study performed by Rasković et al. (2011) included only small and medium sized, high-tech Slovenian companies. Such companies usually put more emphasis on education and training than average Slovenian companies do.

Both, Perko (2004) and Kljajič (2003) made research on strategy of Slovenian companies and came to similar conclusion. Participants in researches were among the most recognizable companies in Slovenia and some of them were even among the best performers. Mostly they defined their strategic goals quite clearly and they know exactly what they want to achieve, but unfortunately a big problem represents a time component – until when they want to achieve something.

Tools for open innovation promotion within Slovenian companies are under-researched and not utilized enough in practice. Rangus (2010) argues that big majority Slovenian companies are still not familiar with the concept of open innovation. In order to create a sustainable competitive economy in Slovenia, a successful execution of business activities is needed (Černe, Škerlavaj & Jaklič, 2010). Miloš Ebner (Martič, 2011) believes that culture of innovation

could be improved by implementing open innovation as part of company's strategy, by employing innovative staff, by appropriate management approach and support, by creating conditions for idea formation and by appropriate reward system. In his opinion, government and companies do not invest enough in development. On short-run this always represents a cost, but on long-term it leads to profit. He believes that the main reasons that companies do not invest more in development are poor vision and short-term focus.

4.2 The external business environment of Slovenian companies

According to Rašković et al. (2011) almost in all cases, the average estimated availability of internal elements was considerably higher than the availability of external elements. This indicates that elements of external environment represent a bigger obstacle in their work than elements of internal environment do.

4.2.1 The narrower external business environment of Slovenian companies

In this section I will focus on different aspects of Slovenian narrower internal business environment that are in my opinion the most important for open innovation, starting with supplier integration in the innovation process, followed by cooperation with customers and research institutes.

Each company is placed at the center of its own ecosystem. It can produce new value by collaborating with others. A company can strengthen its relationship and collaboration with partners by innovating openly. The theory claims that open innovation produces better new products and services faster and at lower cost. However, according to Mulgan (2010) open innovation is still an activity of few. In addition, he argues that today, when companies compete more willingly than they collaborate, it is very difficult to embrace these partnership-based forms of innovation. According to Fink (2011), the best ideas are given to companies by their suppliers, customers and experts from research centers.

According to the Community Innovation Survey, the collaboration of innovative companies is on the rise in all categories. The indicator includes all kinds of cooperation with any kind of entity – from public research institutions to other companies. According to Eurostat (2011) in 2008, one third of innovative enterprises in the EU27 cooperated with other enterprises, universities or public research institutes, while the remaining two thirds relied only on internal resources.

Companies cooperate mostly with suppliers and customers. In 2008, 48% of Slovenian companies collaborated with external partners, where as on average 27% of companies from EU27 cooperated with external partners. In 2010, the degree of innovation cooperation places Slovenian companies on the fourth place in the EU. What is more, the innovation collaboration with a European partner was the highest in Slovenia (35.0%) (Eurostat, 2011).

The process of identifying customer needs is an extremely important part of product development. A significant part of innovations occur at the intersection between innovative supplier or customer on one side and company on the other (Quinn, 2000). According to the research made within Slovenian companies, early customer involvement in product development can accelerate the whole development process and it can also reduce the risk of need for further changes. Slovenia already has a few good practices from the field of customer integration (Fatur & Dolinšek, 2009; Fatur & Novak, 2008). In addition, Slovenian companies recognize also the importance of supplier integration. Approximately 34% of Slovenian companies indicated that they are collaborating with suppliers in development process (Rašković & Pustovrh, 2010).

An increase in cooperation between the years 2002 and 2006 is also recorded in cooperation of innovative companies with public research institutes, even though this is the least dynamic area of collaboration. Companies claim that only a very small amount of information, coming from public research institutes, is relevant for them (Bučar et al., 2010). However, a study has shown, that some successful companies have established strong connections with public research (universities or research institutes) and the result of mutual cooperation is beneficial to both sides (Bučar & Rojec, 2009).

4.2.2 The broader external business environment of Slovenian companies

According to the theory in the company, innovation is not influenced just by business activities, customers, suppliers and state of the economy but also by the wider political, social and technological environment. In the following paragraphs I am explaining the current state of these Slovenian environments.

Political Environment. Membership in the European and world organizations, such as the EU, NATO, the Economic and Monetary Union, etc. has had a positive influence on innovation activity in Slovenia. In order to join these organizations Slovenia needed to meet certain criteria of excellence. With these memberships Slovenia removed several barriers, which were creating weaker competitive position of companies. We are involved in many initiatives and actions can be accessed by joint R&D funds. In order to join these organizations Slovenia needed to remove several barriers, which represented competitive disadvantage for Slovenian companies. A stable monetary environment (provided by the Euro) is one of the preconditions for the development and implementation of successful innovation policies (Stres, Trobec & Podobnik, 2009). The government has been gradually withdrawing from the ownership of companies. However, the government still remains directly and indirectly one of the major owners of the Slovenian economy. The World Bank report “Doing Business”, which monitors the effectiveness of regulatory business environments, found out that slow and inefficient elimination of administrative barriers is an important barrier in increasing innovation. However, the overall Ease of Doing Business ranking improved in 2010 comparing to 2009 – from 43rd place to 42nd out of 183 countries (World Bank, 2010). International Institute for Management Development World Competitiveness Scoreboard ranked Slovenia on 52nd place on scale of 58 countries, which represents a slid for 20 points (Slovenia was on 32nd place in

2009). This year's ranking reflects the significant downturn in economic growth and increasing unemployment (IMD, 2010).

With the entire burden of taxes and contributions, as measured by the share of gross domestic product, Slovenia was ranked in the upper third of countries with the highest burden. In Slovenia, taxes on work have been explicitly higher than the EU average (Stres et al., 2009). The high tax burden is one of the biggest inhibitors of innovation in Slovenia. Most developed economies in the world are usually based on innovation, and in the last years especially open innovation. Scandinavian countries, which often represent an inspiration for Slovenia, are a great example of such policy. According to Štrancar (2007) a high degree of Scandinavian welfare state is based on high taxes, especially on luxury and on extremely effective and noncorruptive management of collected taxes and their investment in education, R&D. What is more a part of these sources is used to establish more favorable environment for innovative and high-tech entrepreneurship. Such policy enables Scandinavian countries to achieve high added value and competitiveness on this market, despite one of the most expensive labor force.

At this point, our policy makers should ask themselves if Slovenia is mature enough for creating a model similar to the Scandinavian model. Is Slovenia efficient enough, are people fair enough for such system, will they follow the agreements, will they respect the law, are they efficient in R&D, is the Slovenian corporate culture appropriate, are people interested in entrepreneurship, etc.

Especially in the last two decades, Slovenia has been supporting development of institutions for R&D and open innovation policy implementation. In 1994 the government supported the formation of technology parks and centres, in 2001 clusters were implemented, then incubators, technology networks and centres of excellence in 2003, followed by technology platforms in 2004. In addition, Slovenia has developed different business information units like the Small Business Development Centre, Innovation Relay Centres, Euro-Info-Centres, regional development agencies, Slovene Enterprise Fund, etc. (Breitfuss & Stanovnik, 2007).

All of these institutions were founded to offer the best innovation system possible. However, these institutions were nationally founded and as a consequence were often insufficient. According to Bučar and Stare (2006) several institutions spent too much energy on finding a way to survive instead of carrying out the tasks they were established for. According to their main tasks Bučar et al. (2010) grouped them in the following categories:

- Government funding agencies**:** Slovenian Research Agency, Slovenian Technology Agency, Public Agency for Entrepreneurship and Foreign Investment, Slovenian Enterprise Fund;
- Bridging institutions**:** centers of excellence, technology centers, technology platforms, clusters;
- Innovation support institutions**:** technology parks, business and university incubators, regional development agencies;
- Financial intermediaries: venture funds, business angels association;
- Interest organizations: Chamber of Commerce and Industry, Chamber of Craft and Small Business of Slovenia, SID Banka, etc.

Economic Environment. The estimated Slovenian gross domestic product per capita in 2010 was 19,782 Euros and estimated real growth rate was 1%. Within the period from 2004 to 2007 the average annual growth rate accelerated, this was due to the favorable international environment, which increased in exports, investment in machinery and equipment, investments in infrastructure and increased productivity (Eurostat, 2011).

The growth of the purchasing power has a positive impact on innovative activity and as already stated above; the same applies to economic growth. However, Slovenian economic growth is not backed enough with structural shifts important for sustainable increase in productivity, competitiveness and long-term stable growth (Bučar et al., 2010). Price stability, which had been achieved in years before the introduction of the Euro, has been endangered by the external price shocks. The annual inflation in Slovenia in 2010 was estimated at 2.1% (SURS, 2011; Eurostat, 2011).

Slovenia is an economy that is small enough compared to the world markets and its policies do not have a greater effect on world prices. As a consequence, being open and engaging in global international trade is extremely important for Slovenia as a small country in order to be competitive and ensure long-term development. The company that wants to be competitive on a global scale must be involved in the processes of its suppliers and customers. Global competition is constantly increasing so companies must pay attention to where they get their raw materials from and how the products and services are designed. In the process of industries' global concentration will beside industry globalists survive only rapidly growing and constantly profitable market niches winners (Vizjak, 2007). The vast majority of the world market share will be in the hands of a few industry globalists and the rest of the market will be in the hands of a small number of global market niche' winners.

According to Eurostat (2011) the current account balance for the year 2010 was estimated to be -416 million Euros. Among major export products in 2010 were manufactured goods, machinery and transport equipment, chemicals and food. The international competitiveness of other business sectors is low. Slovenia has one of the lowest share of foreign direct investments in gross domestic products in the EU.

Value added per employee in Slovenia is one third lower than the EU average. In 2010, gross value added per employee in Slovenia was 35,152 Euro. In 2007, the EU27 economies generated nearly 6,000 billion Euros of added value, within which Slovenia contributed 18 billion Euros. On average, each employee in the EU27 in 2007 generated 45,790 Euros in gross value added, which is a measure of average productivity. For Slovenia, this value was one third lower and amounts to 30,440 Euros (Eurostat, 2011).

We can see from the data above, that the gross value added per employee in Slovenia increased in the last three years. However, according to GRS (2011) relatively lower added value per employee was mainly result of the Slovenian economy structure (lower proportion of technologically sophisticated and knowledge-based services) and lower levels of productivity in sectors, where there is still considerable potential for increasing value added per employee. This could be achieved by R&D intensification, human capital and open innovation. In other

words, Slovenian economy should be restructured by transferring less labor intensive into more service-oriented activities, with a higher proportion of high technology products.

Social Environment. The current global financial crisis has reduced employment; in 2010 the estimated unemployment rate was 10.6%, which put Slovenia in 113th place out of 200 countries in the world. The World Bank report "Doing Business" found out that Slovenia still falls in the bottom 20% of the countries in the Employing Workers indicator due to the difficulty of hiring and laying off. The hiring index is three times the OECD average (World Bank, 2010). As a consequence, Slovenia has a rigid labor market, which inhibits entrepreneurship and the restructuring of companies.

Since 2005, the population growth rate in Slovenia has slightly increased, it is important to note that immigration has contributed to this increase (Eurostat, 2011). According to SURS (2011) Slovenia has low birth rate (8.8 births/1,000 population in 2010) and increasing life expectancy (in 2000 it was 76.3 years and in 2010 77.3 years), which leads to increasing number of elderly people (in 2000 there was 14.9% of residents older than 65 years and in 2010 there was 16.8% of residents older than 65 years). The aging population requires long-term solutions for health and social care and the pension system. This process is currently slower than in the EU. In addition, the aging population will affect the labor market (less labor, need for skilled immigrants). In Slovenia, the employment of elderly became one of the government's priorities in 2005 when active employment policy schemes have been introduced to solve the social problems of people aged over 55 (Žnidaršič and Dimovski, 2009). In 2010 Slovenia planned to achieve the EU goal of the 50% employment rate of people aged 55 – 64 but it had reached only 35% (Eurostat, 2011).

Uneven regional development in Slovenia is a consequence of several factors, including uneven intensity of innovation activity and centralization. Šušteršič, Rojec and Korenika (2005) claim that more balanced regional development will have a positive impact on the innovation development of Slovenia as a whole. As a result of globalization, new strategies should be implemented as soon as possible in order to maintain competitiveness. One successful approach to achieve this is the use of open innovation between different stakeholders and regional systems. According to Stres et al. (2009) Slovenian government has already been taking same measurements for improving open innovation environment like restructuring labor-intensive industries, increasing technological complexity of products, designing innovative regions, promoting regional economies with technology parks and incubators and providing financial incentives for local economic development, social activities and infrastructure. If these measures will turned out as a success, Slovenia could be moved in the society of more innovative developed countries.

Educational structure of the adult population has been improving in the last decade, especially in the tertiary education and Slovenia is now very close to the EU average (Eurostat, 2011). The ratio between the number of students and teaching staff is high and it reduces possibilities for higher quality of study. In the last decade, Slovenia has been facing a relatively new challenge - the shortage of science and technology graduates. This challenge is quite difficult to resolve, since changes in the educational system take time. As a consequence, the promotion of

enrollment in science and technology programs is extremely important. The Slovenian government has already been trying to promote enrolment by offering scholarships and limiting the enrollment in other programs (law, economics, etc.). To achieve better results Bučar et al. (2010) believe several other bodies should be engaged: (1) Ministry of Education, since it is responsible for elementary and secondary education; (2) Ministry of the Economy, by promoting employment possibilities; and (3) the business sector with a more active involvement.

In addition, the increase in tertiary education creates a structural problem of young graduates' employment on one side, but it has a favorable effect on the innovation capacity of Slovenia on the other hand. Low efficiency of studies has a negative impact on the innovation activity. According to Stres et al. (2009) in order to improve the results of R&D, patents and innovation activity enough personnel from the field of science and technology must be provided.

The problem of non-harmonized employment and school system becomes even greater with shrinking employment system (due to the current financial crisis and extending working years) on one side and growing educational system (new educational institutions and programs and increased enrollment quotas at each institution) on the other side. In addition, as already mentioned above, Slovenia has "matching problem": (1) Slovenia has significantly more graduates in social sciences, law and business as EU27 on average (in 2010 Slovenia had 42%, EU27 on average 30%), (2) Slovenia has more graduates of tourism and other services (in 2010 Slovenia had 7%, EU27 on average 4%) and (3) Slovenia has fewer graduates of science and technology graduates (in 2010 Slovenia had 5%, EU27 on average 9%). The problem of shortage of science and technology graduates becomes even bigger when we compare Slovenian 4% with other EU27 countries and we find out that Slovenia has the second minimum percentage of science and technology graduates (Eurostat, 2011).

Technological Environment. Adapting technology to environmental challenges and norms on one side imposes costs but on the other side it creates several new innovation and development opportunities. Bučar et al. (2010) claim that by increasing the competitiveness and efficiency of the service sector, which is still lower than the EU average, Slovenia will increase the innovation potential of the entire economy.

The share of gross domestic expenditure on R&D activity is too low, especially the expenditure of the business sector. According to Eurostat (2011) the last available data for all EU27 countries in 2008 shows that the share of gross domestic expenditure on R&D in GDP was 1.66% in Slovenia. Regarding investment in R&D, Slovenia is close to the EU27 average, which accounted for 1.9% in 2008. However, a bigger difference can be seen in the share of gross domestic expenditure of the Slovenian business sector on R&D in GDP, which was 1.1% in 2008 whereas in the EU27 it was 1.3%. A good example of successful Slovenian company that strongly invests in R&D is Krka. According to Marn (2011) in 2010 Krka invested 9% of sale's funds, what is three times higher than EU27 goal of 3%. Countries with strong, established R&D (Denmark, Sweden, Germany) have higher expenditure of business sector on R&D activity, whereas in Slovenia government-funding also played an important role.

The share of researchers employed in the economy is also too low in Slovenia. The main challenge for the future is to maximize the efficiency of the sources that the country invests in knowledge. In recent years, the country has increased aid to small and medium-sized enterprises, which has had a positive effect on innovativeness (Stres et al., 2009). If Slovenia wants to catch up innovative leaders, intra-sectoral productivity growth is extremely important. Slovenia has in comparison with the EU27 most developed economies large setback and so a huge potential for growth especially in technologically sophisticated industries. The exception is chemical industry, which is in Slovenia represented also by pharmaceutical industry. Pharmaceutical sector is one of the most demanding high-tech activities in Slovenia.

Another implication of Slovenian setback behind EU27 most developed economies is high-technology patents per million inhabitants of a country. Slovenia had in 2008 3.98 high-technology patents per million inhabitants, EU27 10,802 and Sweden 36,749. In comparison to the world data, Japan had 25,975 high-technology patents per million inhabitants and U.S. 9,743 (Eurostat, 2011). According to Nared and Perko (2009) the current Slovenian government investment priority technological areas are information and communication technologies, medical sciences, a new synthetic metallic and nonmetallic materials, nanotechnologies, complex systems and innovations (including open innovation) and technology for a sustainable economy.

European Union is also supporting innovation and R&D in different regions within EU27. One mechanism is Regional policy, which is a part of the European smart growth strategy, called Europe 2020. Europe 2020 is the EU's growth strategy for the upcoming decade. It emphasizes investment in research, innovation and human capital that are crucial for all regions. European regional diversity supports different paths to achieve growth, from innovation and collaboration with external partners to specialization. Economies will be able to gain from this strategy by exploiting global specialization niches and strengthening a region's knowledge-based potential. In addition, Regional policy represents proposed smart specialization strategy for individual regions in order to help policy-makers to enhance regional innovation potentials, invest in smart growth and ensure more effective use of European, national and regional funds (Innovation Union, 2011).

4.3 Methodology of the research of open innovation paradigm in the business environment of Slovenian companies

In order to perform a research I used a qualitative research method, which is based on information, expressed with words, opinions and feelings (Patton, 2005). With qualitative research we try to define the problem more in detail by connecting and analyzing data (Walliman, 2006). The interview itself is carried out to enable the researcher to answer one or more of his or her research questions. Interviewing is a conversational practice where knowledge is produced through the interaction between interviewer and interviewees (Given, 2008). This method is used to obtain knowledge about a given topic, to discover deeply rooted

information, where we try to answer the question why (Taylor & Bogdan, 1998). We are discovering interviewee's feelings, norms, perception, etc. The biggest barrier with qualitative research is interviewee's subjective opinion with research and interpretation of results (Silverman, 2009).

Most qualitative research interviews are semi-structured, where the interviewer prepares a general framework for the interview in advance, but he/she still has the option to pursue the question in a different order and to allocate more time to some questions (Given, 2008). Qualitative interview is defined by setting questions and encouraging conversation with the purpose of acquiring information and better understanding behavior. In addition, interviews provide new ideas for improvements and they uncover potential strategic directions for company (Williman, 2006). According to Yin (1994) the main benefit of the interview is the strong focus on research object.

I made qualitative research, which was conducted through the semi-structured interviews, since there has not been any in depth analysis made in Slovenia on this topic yet. In 2010 Rangus performed research by which she found out that in majority of Slovenian companies, high-tech as well as low-tech, they have not yet heard about the concept of open innovation. The same year the survey made by Rašković and Pustovrh (2010) showed that most companies believe that supporting institutions of Slovenian business environment are discoordinated. My goal was to better understand the context and meaning of the gathered data. By performing semi-structured interviews I managed to gather primary data. The focus of my qualitative research was on understanding the full multi-dimensional, dynamic picture of contextual variables of open innovation paradigm in the business environment of Slovenian companies. After gathering data I made a comparison between interviewees' opinions and thoughts.

In order to prove validity of my research I used triangulation method. Triangulation compares different kinds of data (quantitative and qualitative) and different methods (observation and interviews) and it gives a better picture of the situation (Eisenhardt, 1989; Altrichter, Feldman, Posch and Somekh, 2008). In addition, authors claim that triangulation helps to overcome potential prejudice from using a single method (Hussey & Hussey, 1997; Eden & Huxham, 2002). I achieved triangulation by using more than one source of data that were collected from different sources. First, they were collected from existing researches, documents, interviews and policies. Then, I researched more in detail via the semi-structured in-depth interviews.

Before making the semi-structured in-depth interviews, I met all of the interviewees. I believe that all of them provided me quite open and honest answers. Based on this, I believe that my conclusions should truthfully represent what is happening currently in Slovenian business environment regarding open innovation.

4.3.1 Interview stream

I performed 14 in-depth, semi-structured interviews with 7 companies and 7 governmental institutions (see Appendix 1 and 2). All of them were arranged in advance. In order to ensure face validity of my interview I pre-tested the questions with six experts. All interviews were made in interviewees' work place and they all agreed with publishing their answers in my master thesis.

I began the interview by defining the situation for the participant by explaining what open innovation is and I informed the interviewees about the purpose of the interview. I prepared an interview guide in which research questions were given. After that, the semi-structured questions followed. The interviews were rounded off with a debriefing where the interviewees had a chance to add some comments. The length of the interview was ranging from 36 to 48 minutes. The interviews were audio recorded, later transcribed and sent to interviewee for confirmation.

4.3.2 Analysis of interviewee's demographic data

Out of fourteen interviewees, eight of them were male and six were female. To be more precise, within companies representatives six of them were male and one woman and within institution representatives two were male and five were female. Interviewees were between thirty-five to fifty-six years old, their average age was 44 years old and standard deviation was 6.69 (see Table 8 on the following page).

Three interviewees are directors and founders of the company. One interviewee is director, one is board member, who is in charge of strategy, innovations and finance, and two of them are managers whereas three interviewees from governmental institutions were directors, two division directors and two secretaries.

Six interviewed companies were hi-tech and the core business activity of the seventh company was manufacture of metal structures and parts. One interviewed company have less than 10 employees, four companies and four institutions have less than 50 employees, one company and one institution has between 50 to 250 employees and one company and two institutions have more than 250 employees. The average annual income of three companies and one institution is lower than 2 million Euros, for one company and three institutions is between 2 and 8.8 million Euros, for one company between 8.8 and 35 million Euros and for two companies more than 35 million Euros. However, the average annual income is not available for three institutions.

Table 8: Interviewee's demographic data

Variable	Data		
Gender	Total – Female: 6 – Male: 8	Companies – Female: 1 – Male: 6	Institutions – Female: 5 – Male: 2
Age	– Range: 35-56 – Average: 44 – St. dev: 6.69		
Job Title	Companies – Director and founder: 3 – Director: 1 – Board member: 1 – Manager: 2	Institutions – Director: 3 – Division director: 2 – Secretary: 2	
Industries	Companies – Hi-tech: 6 – Manufacture of metal structures and parts: 1	Institutions – Incubator: 1 – Centre of excellence: 2 – Ministry: 2 – Technology park: 1 – Faculty: 1	
# of employees	Companies – Less than 10: 1 – From 11 to 50: 4 – From 51 to 250: 1 – More than 250: 1	Institutions – From 11 to 50: 4 – From 51 to 250: 1 – More than 250: 2	
Average annual income	Companies – Less than 2 million Euros: 3 – From 2 to 8.8 million Euros: 1 – From 8.8 to 35 million Euros: 1 – More than 35 million Euros: 2	Institutions – Less than 2 million Euros: 1 – From 2 to 8.8 million Euros: 3 – Not available: 3	

4.4 Main findings

With interviews I wanted to find out what companies on one side and governmental institutions one the other side think about the current Slovenian business environment in connection with open innovation. I will first explain the main findings of both groups, what was their common believe and later I will try to connect opinions of both and draw some parallels – on what they agree (what there is in Slovenia, what is missing) and on what they disagree.

4.4.1 Main findings from interviewing companies

Rangus (2010) found out that among Slovenian high-tech SMEs only few Slovenian companies innovate openly. Unfortunately, 42.1% of interviewed companies have not heard about the concept of open innovation. Due to these facts I decided to interview only companies that innovate openly by cooperating with external partners. Only such companies are competent enough to provide me valid conclusions. I interviewed one micro company (ISKRALAB d.o.o.), four small companies (C3M d.o.o., COSYLAB d.d., BIA

SEPARATIONS d.o.o., Instrumentation Technologies, d.d.), one medium (Bisol d.o.o.) and one big company (Trimo d.d.).

All interviewed companies innovate openly. Some of them collaborate with Slovenian and some with foreign partners. They innovate together with institutions and other companies. All of them innovate openly with suppliers and customers in order to solve problems. All interviewees innovate openly because they see the biggest advantages of open innovation in additional external know-how, for example Bisol: "*Each company can not have the greatest experts from all fields and that is why it is necessary to open yourself and collaborate with external partners*". Four respondents believe that open innovation will lead also to lower development costs and shorter development (and time to market) time. In addition, two interviewees pointed out also the benefit of cohesion of skills, experiences, facilities and equipment and one mentioned also the requests of international tenders for cooperation of several organizations.

My third question to companies was what they see as the biggest disadvantage of innovating openly. Although all interviewing companies cooperate with external partners they all said that they do not have bad experience with such collaboration. However, they see potential threats in poor legal protection (intellectual property rights), theft of know-how and ideas, unclear task distribution, misunderstandings, distrust, unfair income distribution and different goals.

After that I tried to find out, which elements of internal business environment companies see as main stimulator of open innovation. Majority mentioned organizational structure, human resources, strategy, values, culture and additional financial and material resources. However, they see low level of trust between partners as the most frequent constraint. Partners are often afraid of ideas being stolen and unfair play. Few of interviewees also mentioned the Not Invented Here syndrome.

With my fifth and sixth question to companies I wanted to find out how they feel about Slovenian external business environment regarding open innovation. I first asked them, which elements of narrower external business environment influence open innovation. Again, the respondents' answers were very similar. Most of them collaborate with customers. In addition, some of them cooperate also with suppliers. Respondents pointed out especially the fear of intellectual property rights' theft. After that I wanted to find out how they feel about broader external business environment in Slovenia. As a main stimulator some of them (C3M, Cosylab, BISOL, Iskralab, Instrumentation Technologies) mentioned political environment since their companies work together with other external partners on different public tenders (Slovenian, European and international). However, others pointed out just the opposite – they are feeling the lack of governmental support, for example Trimo: "*Our company does not receive enough governmental support in all phases of open innovation, we are missing it especially in marketing on foreign markets*". As one of the main constraints they mentioned social environment and fact that Slovenian people are still too close-minded. An interviewee from BIA Separation expressed his opinion: "*Government should not interfere in economy, since such actions slow down the innovativeness. I believe that companies should have more open hands*".

I concluded the interview by asking companies' representatives what they believe is ideal business environment for open innovation. They all believe that government has been doing much more in last years than before in order to promote open innovation. However, respondents suggested that government should:

- decide on priority areas – C3M: "*It is necessary to define priority areas on which Slovenia will focus in the future, since competitive advantage can only be achieved by specialization*";
- improve legislation – intellectual property rights – Trimo: "*It is necessary for Slovenia to have strong legal protection and improve intellectual property rights regimes"*;
- encourage investments – BIA Separations: "*Banks should offer more favorable bank loans; venture capital and offer of other funding sources that encourage risky projects should be substantially increased*";
- support continuing education of employees – Instrumentation technologies: "*Supporting continuing education, incentives for creating new jobs and R&D groups in companies*";
- more favorable tax policies – IskraLAB: "*The government should change the overall tax legislation, which is currently very hostile to business*", Cosylab: "*I see solution for open innovation support in lowering taxes on well-educated employees*"; and
- provide stable business environment – Bisol: "*The main role of government is to provide stable business environment. The government should not interfere with their operation and it should not directly interfere in economy*".

4.4.2 Main findings from interviewing institutions

When selecting the interviewees I chose two ministries (Ministry of the Economy and Ministry of Higher Education, Science and Technology), one educational institution (Faculty of Economics, Ljubljana (hereinafter FELU)), two bridging institutions (COBIK and EN-FIST) and two innovation support institutions (Technology park Ljubljana and Ljubljana University Incubator). I contacted also Public Agency for Technology of the Republic of Slovenia (TIA), Slovenian Research Agency (ARRS), Chamber of Commerce and Industry, Chamber of Craft and Small Business of Slovenia but unfortunately they did not respond or wish to participate.

I started the interview with institution's representatives by asking them what is the role of their institution in encouraging and promoting open innovation. Since I interviewed only institutions that support open innovation, all interviewees agreed that they play an extremely important role. Educational institution sees its purpose in encouragement of creative and innovative thinking, for example Faculty of Economics: "*All FELU programs are designed with the purpose to stimulate students and business executives to think creatively and innovatively. We also provide teaching methods that support such thinking, like: D-SCHOOL, business plans and projects that propose solutions and ideas to companies"*. In addition, they also organize and cooperate in conferences, round tables, research projects, etc. For supporting start-ups government funded University Incubators (e.g. University Incubator Ljubljana), whose clients

are young innovative companies. Young companies can then join Technology Park. There are nine university incubators and technology parks in Slovenia. Both, Ljubljana University Incubator and Technology Park, offer them facilities and opportunities to establish social network. They organize workshops and provide education for companies. In addition Technology Park also helps them find venture capital. There are also centres of excellence (COBIK, EN-FIST), which connect established companies with similar strategy and vision. What is more, they encourage also collaboration with the centers of knowledge: the universities and research institutes. All these institutions are supported by government through Ministry of Economy or Ministry of Higher Education, Science and Technology.

My second question to institution representatives was what they see as the main motive for companies to innovate openly. They believe that one of the biggest advantages of collaboration with external partners is interdisciplinary – different fields of expertise and know-how, for example Ministry of Higher Education, Science and Technology: "*I see the primary benefit in access to external knowledge and stakeholders' involvement with the purpose of achieving the development cycle as soon as possible*". In addition, two of them think that innovating openly also lowers costs and they claim that it reduces time to market – COBIK: "*Innovating openly reduces costs, since it eliminates the need to hire additional experts. If collaboration and relations between companies are good, the development time can also be reduced*". They also mentioned that by innovating openly the company increases its possibilities to survive on the market and its product's reputation.

After that I wanted to find out what they believe are the biggest threats in open innovation. Majority of representatives mentioned problems regarding intellectual property rights, sharing exceptional knowledge with external partners, clear agreements, dividing tasks and defining and then following mutual goals, like Ministry of Economy: "*A lot of confidence, clear arrangements and task division are needed when innovating openly*. *I believe we are weak on these areas. Greater emphasis is needed on intellectual property rights and other legal provisions*". Some of them mentioned also the honesty, goodwill of all partners and Not Invented Here syndrome.

In fourth question I asked them what they believe would be an ideal business environment for open innovation. They agreed that in order to be innovative you need more than just good idea – you need to realize this idea, transform it into product/service and successfully place it on market. To achieve this, a company needs knowledge and financial resources. In addition, they believe that it is necessary for Slovenian people to change their way of thinking; they should start trusting partners and being more open-minded to new approaches of doing business. An interviewee from Faculty of Economics said: "*It is extremely important to create a culture of commitment to open innovations, to base the growth on all types of innovation (not just technology – innovation and open systems are often understood too narrow in Slovenia) and that every individual in the company is aware that only together with all stakeholders the company can create breakthroughs and future growth*".

They agree that there are enough supporting governmental institutions, but they are not connected enough with each other. In addition, they claim that changes in Slovenian

educational program are needed. A respondent from EN-FIST concluded: "*All Slovenian faculties should offer the basic economic courses such as Entrepreneurship, Introduction to accounting, Business law and Corporate finance. In addition, there is a huge gap in knowledge of marketing and possibilities to obtain the necessary funds*".

With my next question I wanted to gather their opinion on what should be done by companies themselves in order to innovate more openly. The interviewees agreed that the starting point should be, as already mentioned before, the change in Slovenian people's mentality. Representative from Ministry of Higher Education, Science and Technology said: "*It is necessary to leave the existing patterns of thinking and behaving. Global environment is constantly changing and so should Slovenian environment, including the Slovenian people"*. However, this is a long-term process and goal. In addition, strong managerial support is needed. They should realize that company could only together with other stakeholders create breakthrough innovations and growth.

I concluded the interview by asking them what they think will happen in the future and how will their institution support, encourage and promote open innovation. Faculty of Economics: "*We will put even more emphasis on internationalization and knowledge transfer in the future. We will try to encourage innovative thinking and learning. Open innovation systems are a reality for quite few years now in the world and they should also accelerate the development in Slovenia*". Some believe that in certain cases it is better for government not to interfere. A representative from Ministry of Higher Education and Science said: "*At certain point we should ask ourselves if perhaps it is not the best governmental policy not to interfere in economy and market*". The government should realize all great ideas that are still kept only on the paper and not just by funding but also by helping companies in creating more favorable business environment for open innovation – lower taxes on well-educated employees, increase legal rights, etc.

4.4.3 Comparison of findings between companies and institutions

After gathering opinions from companies' and institutions' representatives, it is clearer what companies and institutions see differently and what they agree on (see Table 9 on the following page). On question what they see as the biggest advantage of innovating openly majority answered external expertise and know-how, followed by lower development costs and shorter development (and time to market) time. In addition, companies pointed out also the benefit of cohesion of skills, experiences, facilities and equipment, whereas institutions mentioned interdisciplinary and higher product's reputation.

After that I was interested in threats of innovating openly and both, companies and institutions, agreed on following: poor legal protection (intellectual property rights), theft of know-how and ideas, unclear task distribution, misunderstandings, distrust and different goals represent the biggest threat. Beside already mentioned disadvantages, companies pointed out also threat of unfair income distribution whereas institution saw potential problems with Not Invented Here syndrome.

I concluded the interview by asking them what they believe is ideal business environment for open innovation. They all agreed that government has been doing much more in last few years than before in order to promote open innovation. The main role of government is to provide stable business environment and to support continuing education of employees. Some interviewees suggested more favorable tax policies (lowering taxes especially on highly educated employees). Companies' representative mentioned also the need to improve legislation – intellectual property rights and encourage venture capital, whereas institutions see the necessity for Slovenian people to change their way of thinking, they should start trusting partners and being more open-minded to new approaches of doing business.

Table 9: Determinants from Slovenian business environment that influence open innovation according to companies and institutions

External element	In common (agree both – companies and institutions)	Different opinions
Advantages of innovating openly	– Know-how and expertise, – lower development costs, and – shorter development time.	– Companies: –cohesion of skills and experiences, –joint facilities and equipment. – Institutions: –interdisciplinary, and –higher product's reputation.
Disadvantages of innovating openly	– Poor legal protection (IPR), – theft of know-how and ideas, – unclear task distribution, – misunderstandings, – distrust, and – different goals.	– Companies: –unfair income distribution. – Institutions: –Not Invented Here syndrome.
Ideal business environment for open innovation	– Stable business environment – continuous education of employees, and – more favorable tax policies.	– Companies: –improved legislation – intellectual property rights, and –encourage venture capital. – Institutions: –necessary for Slovenian people to change their way of thinking – trusting partners.

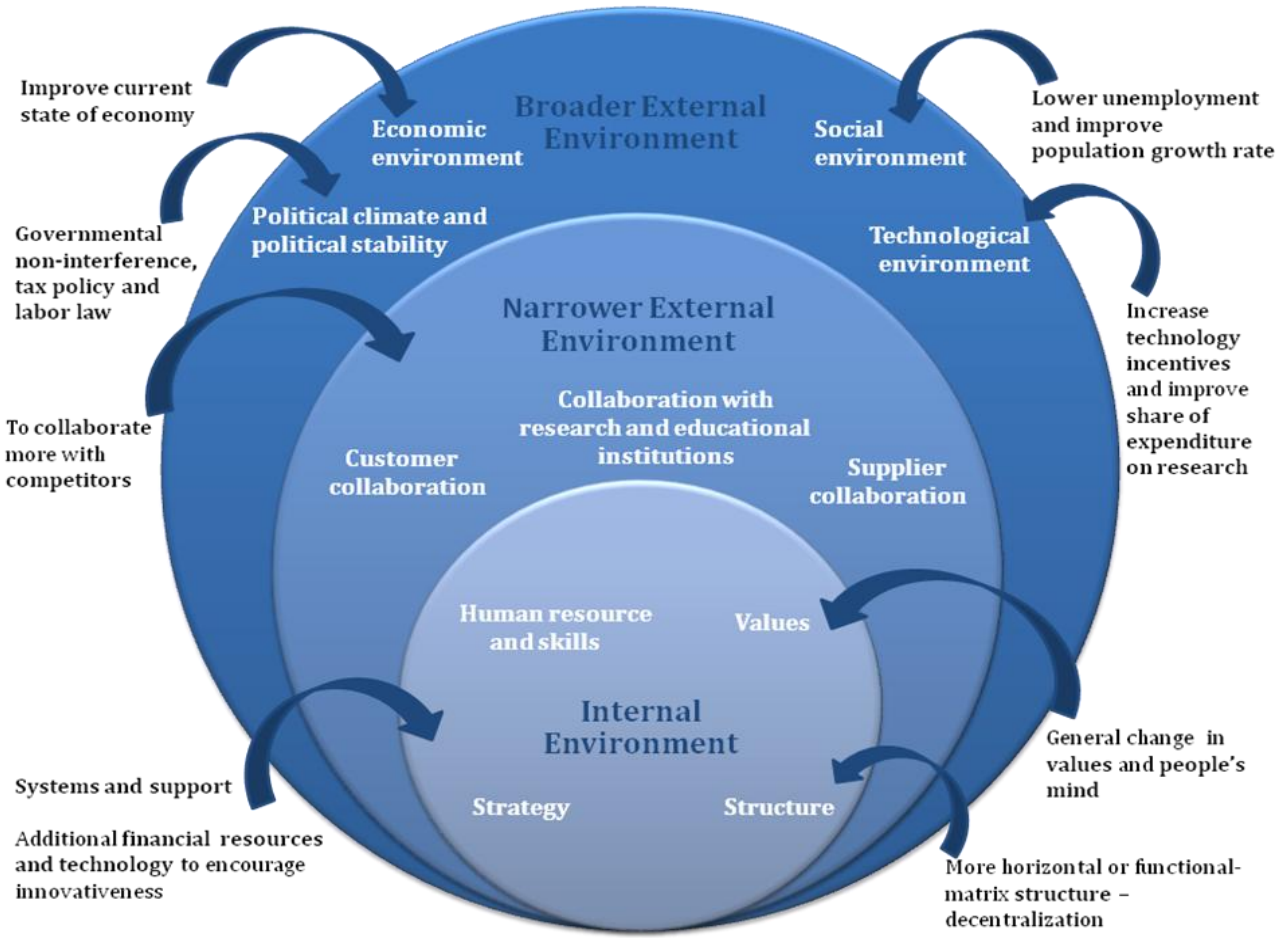
4.4.4 Main determinants from the environment that influence open innovation in Slovenian companies

The goal of my empirical research was to find out what is current situation in Slovenian business environment, how much support external and internal business environments in Slovenian companies provide for open innovation and how do companies on one side and institutions on the other side feel about it. I wanted to find out on which points they agree and what they see differently. Drawing on the qualitative information provided by the companies and institutions enabled me to provide the model of Slovenian business environment, what it is already offering and what needs to be improved for encouraging open innovation (see Figure 8 on the following page).

In answers provided by interviewees I found out that our companies, especially small and medium, employ highly educated specialist. All interviewees said that they have strong R&D departments and that their human resources represent a stimulator for innovation and collaboration with external partners. What interviewees are missing in their companies (and in other Slovenian companies) is reward system and support, which will encourage employees to engage in innovative behavior. In addition they all believe that some additional financial resources and newest technology would enable and encourage innovativeness and competitiveness.

Smaller interviewed companies have in majority horizontal structure whereas bigger companies have functional-matrix structure. Such structures encourage communication, flow of ideas and innovation. Interviewees believe that in order to be successful also in the future, company should possess values like creativity, innovativeness, confidentiality, trustworthiness and it should have established clear long-term strategy. Their companies in majority all enclose these elements, but unfortunately my correspondents believe that greater part of Slovenian companies still needs to improve and encounter their strategy and follow their values also in real life not just on paper.

Figure 8: Contextual variables from Slovenian business environment that influence open innovation



When trying to find out, which determinants influence narrower external environment I found out that interviewees believe in importance and benefits of open innovation. Interviewees mainly cooperate with customers and suppliers. They believe that customer collaboration address the importance of a two-way information flow between company's sales and product development. This integration of sales and service organizations with R&D department helps realize customer product and service requirements.

Interviewees believed that supplier collaboration does not only strengthen the relationship between supplier and company but it can also lead to much higher efficiency. In addition interviewed companies believe that closer collaboration with suppliers results also in reducing the waste and/or poor value. What is more, the process of managing supply chain risk improved because the supplier and company together are able to better plan effectively for the future.

Companies I interviewed see in collaboration with research and educational institutions big benefits since they can get an objective view. Managers are working with academia because collaboration can advance the company toward its goals. The main observation was that company-academia collaboration often produces very interesting results like marketing analysis, proposed process, etc.

What my correspondents are missing is more collaboration on projects with companies that are competitors on other projects. Such activity helps company to get to know competitors and establish better relationship with them. For me, one of the most interesting parts of interviews was question where I asked both, companies and institutions, which elements of broader external environment stimulate and which constrain open innovation. I was especially interested in political environment since I interviewed also governmental institutions. All interviewers agreed that government is encouraging open innovation activity much more in the last years than it had before Slovenia became a member of EU.

However, some of the interviewees believed that government should not directly interfere in economy, since this slows down the innovativeness and that the companies should have more open hands. Both, interviewed companies and institutions, agreed that the fastest and the most effective way for government to stimulate open innovation is to change tax and labor law. Burden of taxes and contributions in Slovenia is still too high. Government should lower taxes and change labor legislation. In order to remain competitive, Slovenia needs more flexibility on currently rigid markets of work force.

Due to the current financial crisis, the economic environment is not as favorable as it was three years ago, when the growth rate was accelerating. This has influenced interviewed companies and as result they all started to look for new paths to grow – three companies are a part of Centre of excellence for Biosensors, Instrumentation and Process Control and one company has had the chance to grow due to the governmental subsidy in renewable sources of energy. Other companies are developing new products, searching for new markets and new collaborations with external partners. Interviewees pointed out the need to improve economic growth and consequentially also the current state of economy will improve. Governments

already tried to help improve economy by lowering interest rates since lower rates make borrowing cheaper and encourage economic expansion.

The financial crisis has not affected only economic environment but it has had a huge influence also on social environment. The unemployment in Slovenia has been one of the highest in the last decade. Many employees, from highly educated with PhDs to those without any education, have lost their jobs. Interviewed companies are still growing due to their flexibility and strong position on the market. Another element that is very favorable for Slovenian hi-tech companies is the fact that educational structure of the adult population has been improving in the last decade. This means that career attitudes are changing and people are investing in their education. It means that Slovenian companies can find their employees here on domestic labor market, which leads also to lower costs. What causes more concerns, especially in the last months with referendum on pension policy, is the trend of Slovenian population growth rate. Slovenia still has negative rate of natural increase, and with our Pay As You Go pension system this will create unsustainable financial situation.

The interviewees agreed that technological development strongly influences country's economic strength. It should be noted that the technological lag reflects in multiyear lag on the economic level. As a result, in few next years, shift in demanding and high-tech products and services in Slovenia is highly needed or we will face even stronger economic slowdown and the resulting economic collapse. One correspondent added that the business friendly environment does not capture only the amount of funds allocated for R&D, but it is the sum of all factors that affect technological development.

5 DISCUSSION

5.1 Interpretation of research results

As the open innovation paradigm highlights, company can and should use internal and external ideas to drive revenue. Companies from different industries are increasingly reliant on external know-how, ideas, experiences and technology. What is more, companies that innovate openly have access to external facilities and equipment. Open innovation enables companies to respond more flexible to new technologies and access to external experts.

5.1.1 Implications for managers

With my research I tried to find out in what condition is current Slovenian business environment and how favorable it is to open innovation. In answers provided by interviewees I learned that Slovenian companies employ highly educated experts. What is more, all respondents claim that they have strong R&D departments. However, there is still some space to improve and companies could invest more in continuing education of employees. Results of my research regarding the organizational structure, strategy and values are in correlation with

previous researches carried out. Smaller companies usually have more decentralized organization with horizontal structure, whereas bigger companies are more centralized. In interviewed companies the flow of information was enabled and ideas can spread from employees directly to managers. Companies I interviewed in majority all enclose values like creativity, innovativeness, confidentiality and trustworthiness. In addition, they all have clear long-term strategy.

In order to be successful in open innovation on long-term, Slovenian companies need first to improve their internal business environment. The starting point should be the change in Slovenian people's mentality. Employees need to better understand business processes. The first step should be to establish a culture of open innovation. However, there are many barriers that companies will need to break through in order to reach this goal, for example companies often rely on internal, not always entirely optimal logic that is difficult to change, including the Not Invented Here syndrome. According to Černe et al. (2010) technological innovations have a certain "duration time", so value on long-term should be created with non-technological innovation. Based on non-technological innovation, technology innovation is reborn. So, employees need to realize also the importance of non-technological innovation for successful collaboration.

As already stated above, interviewees believe that majority of Slovenian companies are missing a reward system and support, which will encourage employees to engage in more innovative behavior. Rewarding the employees is perhaps the most powerful tool a company can use in changing its current internal business environment to new one, the one that will support creativity and open innovation.

5.1.2 Implications for policy makers

When trying to find out, which determinants influence narrower external environment I found out that my findings are equal to those from Community Innovation survey. According to the results, companies cooperate mostly with customers and suppliers. Companies in different industries are using different approaches to incorporate customer input into product development. Strategic customer collaboration as joint initiatives between company and customer goes well beyond the normal course of business. These initiatives are designed to lift sales and lower costs.

With supplier collaboration, key suppliers become part of the decision-making process. This enables companies to keep suppliers on track and it helps to resolve possible supply chain issues. Supplier collaboration should represent more than just exchange of data. In order for the collaboration to be effective I believe supplier and company should share business strategy, search for joint investments, share benefits and risks and look together for better solutions. Supplier should become a kind of extension of the company.

What was surprising for me was the fact that literature claims that cooperation between companies and institutions is the least dynamic area of collaboration. On contrary, companies I

interviewed specifically pointed out different ways of collaborating with research and educational institutions. Companies should realize that universities are very attractive partners for business since high-quality academic researchers operate in international networks and they know what is going on in their field around the world. In addition, the big advantage of university is that their research teams are constantly being revitalized by the arrival of possibly even brighter new staff.

A collaboration that is in my opinion the least developed in Slovenia is collaboration with competitors. Sharing between competitive companies is a smart strategy as long as the relationship will benefit both parties without compromising each of the firm's competitive position in the industry. Here, the juridical protection (including intellectual property rights and patents) plays an extremely important role. Slovenian companies should collaborate more with competitors (like IskraLAB does).

Next important determinants for company to be successful in open innovation are elements that influence broader external environment. As explained before, Slovenian government accepted a series of measures in order to strengthen the development activities of Slovenian companies. These measures focus especially on strengthening the business environment with key objectives for companies to remain competitive even after the current crisis.

The current government has supported already more than 3500 companies' projects: in 2009 more than 275 million Euros were invested and in 2010 more than 290 million Euros. Two of these projects are designed to promote open innovation. First are centres of excellence in which seven to twenty-two high technology companies, research institutions and universities participate. Second important project are competence centres for the period 2010-2013. Their purpose is to encourage the integration of skills, companies' competencies and research organizations from certain fields of technology, including the collaboration within the country and cross-border cooperation within the EU.

Results from my research regarding political and legal environment were in conjunction with findings of existing literature. As a big disadvantage companies pointed out especially high taxes on educated employees. What is more, OECD and IMF studies have shown that higher taxes on labor significantly increase unemployment (OECD, 2004; IMF, 2003). In Slovenia tax wedge on labor is composed of personal income tax (paid by employee), social security contributions (paid both by employer and employee) and payroll tax (paid by employer). Compared to OECD countries and EU members Slovenia has almost the highest tax wage on labor.

Slovenia's economy has been hit hard by the global crisis, but is now slowly recovering along with other OECD countries. Slovenia is a small country within the Euro area and it is crucial for it to re-establish its competitiveness. Policies to encourage innovation, labor market flexibility and a friendlier business environment would be helpful (OECD, 2011). Nevertheless, we should keep in mind that last year, Slovenia suffered the biggest drop within the IMD World Competitiveness Yearbook surveyed countries (IMD, 2011).

The world economy is expected to recover slowly. Slovenian economy has been gradually approaching the average EU level of development. In 2008 Slovenia reached 91% of average EU27 gross domestic product per capita but in 2009, due to the crisis, Slovenia reached only 88% of average EU27 gross domestic product per capita (Eurostat, 2011). The current financial crisis has changed the business world and also Slovenia should adapt. Slovenia should plan more steady and sustainable growth in the future where banks will need to rely more on domestic financing.

The Slovenian population has in last years increased mainly due to immigration. Life expectancy has been constantly extended and share of residents older than 65 years has been increasing but is still lower than the average in EU countries. Educational structure of population is slowly improving. The labor market is still facing large structural imbalances where the proportion of non-complex jobs is too high. With a decline in economic activity in 2009 the most affected industries were those that employ less-educated workforce, like construction. Slovenian hi-tech industries (chemical, pharmaceutical, software, etc.) on the other side have not been influenced by the crisis so much. In comparison with other EU members, Slovenia is among the countries with the lowest risk of poverty, due to the social benefits and Slovenia is at the top of countries with the lowest income inequality.

Existing researches claim that Slovenian economy is experiencing the lack of science and technology graduates. However, the companies I interviewed were all hi-tech, with strong R&D departments. In addition, they pointed out that Slovenian science faculties produce knowledge that can be easily compared with knowledge students (and employees) gain on other European universities of science.

Positive trend can be seen also in technological environment, where the share of expenditure on research is increasing but unfortunately it is still far too low. Various studies on the competitiveness of Slovenian economy in the last decade have shown that in technological context, Slovenia has regressed. If no action will be taken in the next few years, the most vital parts of the Slovenian economy will find themselves in a situation where textile industry is today (Štrancar, 2005). The government is trying to improve this by establishing supporting institutions and by increasing aid to small and medium enterprises. Interviewed companies are great examples of innovating companies and they are all aware of the importance of external collaboration.

Successful Slovenian entrepreneurs are with development and production of complex innovative products creating new valuable jobs. In order to enable them the continuous progress it is necessary to change the Slovenian tax system and especially reduce the burden of high taxes on researchers and well-educated employees. This should be supported by juridical changes that will stimulate investments in technologically advanced and innovative projects. Without new investments Slovenian economy will not be able to economically progress and create new jobs.

Unfortunately there is no standardized model to solve this problem. As I already mentioned above, I see the biggest benefit in unburdening knowledge and innovation by lowering taxes on

highly educated employees. This will consequentially lead to smart specialization; it will help establishing tighter links between research and development. If the government decides to retain high taxes it should at least compensate with higher incentives, even better infrastructure (more supporting institutions and research projects), more favorable bank loans, true venture capital (not like the one it is offered today on Slovenian market) and all other measures that could create more friendly business environment for entrepreneurship.

5.2 Work assessment and contributions

5.2.1 Theoretical and methodological contributions

The value of the thesis is that it displays, takes into account and considers the previous definition of open innovation paradigm and the elements of business environment by relevant authors. My view on contextual variables of open innovation paradigm in the business environment, which is based on research findings, is a bit different than in other researches from this field.

The theoretical contribution of my master thesis is therefore in supplementation of open innovation body of knowledge, focusing especially on contextual variables of open innovation research model in Slovenian business environment. I follow directions of renowned researchers from this field, like Gassmann, Enkel and Chesbrough (2010), which define open innovation as an evolving field where it is still necessary to define the constructs and their measurement. In addition, future research should include diverse research models and approaches.

Theoretical contributions to open innovation are too often limited to one dimension, like customer integration. A new perspective might be needed to integrate these different elements of evidence into a larger, more consistent theory. In my opinion it is therefore very appropriate that I now present my view on contextual variables of open innovation paradigm in the business environment (which is backed up by a comprehensive literature review). What is more, for the first time in exploring the elements of open innovation business environment I define the elements of Slovenian business environment regarding its stimulators and inhibitors of open innovation. In addition, for the first time master's thesis backs-up theoretical bases of Slovenian business environment from the open innovation standpoint by using qualitative empirical data. Moreover, I empirically tested my research model of different elements from internal and external Slovenian business environment that influence open innovation. The model is based on different theoretical perspectives and proposals by several authors from this extremely popular field.

An important methodological contribution of my master thesis is in the operationalization of the contextual variables of open innovation in the business environment of Slovenian companies. My interview question proved to be reliable and valid since I asked both sides (institutions and companies) and I often received very similar response.

5.2.2 Limitations and future research suggestions

Main restrictions of my master thesis are mainly in the content since open innovation is quite new research area and there is still huge knowledge gap in this field. Most of the reviewed literature is from the period of last five years. As a consequence there is still no unique conclusive definition of research constructs. When formulating my research model I compared and integrated the most frequent and reasonably represented authors' believes. This enabled me to focus on the construct that in my opinion (based on a detailed review of the existing literature) includes the most comprehensive model of contextual variables of open innovation in the business environment of Slovenian companies.

Methodological limitations represent the difficulty of measuring open innovation in the Slovenian business environment, since as Rangus (2010) already found out, only few Slovenian companies innovate openly. What is more, the majority of the companies she interviewed are not familiar with the concept of open innovation. In my research, I therefore included only companies that collaborate with external partners. It is therefore a subjective perception and a subject of errors in perception. In addition, I believe it is necessary to take into account possible biased responding of interviewees as they might want to appear better and more open as they are in reality. By giving them all the chance of anonymity I believe I limited this possibility to the highest possible level.

Measuring open innovation is a new area and it is consequently less developed (Camarinha-Matos, Paraskakis & Afsarmanesh, 2009). It's very difficult to set up an universal metric with the aim of evaluating the success of open innovation. Construct of open innovation is still being developed and it will require some additional work in defining both, the theoretical background as well as empirical confirmation. Authors from this field call for the application of a large-scale empirical study and they are stressing out the lack of empirical research needed to demonstrate the impact appropriate business environment has on promotion of open innovation (Enkel & Gassmann, 2007; Sousa, 2008; Finger & Stucki, 2009; Schroll, 2009a; Lindegaard, 2010).

The measurement instrument includes some limitations and shortcomings, like quite small sample. The validation of research findings is currently limited to qualitative assessment. In order to be able to transmit my research findings on wider geographic area a proposition needs to be tested through quantitative research, for example a multi-level analysis could be carried out using Hierarchical Linear Modeling (HLMs).

Researchers should in my opinion include a variety of research designs and not only follow academics, who were the first to introduce this term. There is still huge knowledge gap in this field, so for future research I recommend the testing of my model on wider geographic area, European or even worldwide. In addition, for higher validity of my research findings, I would recommend to test my model not only in more countries but also on bigger sample – more companies and institutions. Only then we can discuss the generalization of results.

My next recommendation for future research is to examine how to improve the trust of Slovenian companies in external partners and how to encourage collaboration also with competitors. In addition, I believe the impact of organizational climate and culture and other elements of internal business environment should be examined more in detail. The impact of internal business environment on the attitude towards open innovation could also be empirically determined. More closely examined impact of the internal business environment on open innovation is essential for a comprehensive understanding of relationships within the organization and factors that influence its performance.

In order to define the elements of business environment that influence open innovation, it would be interesting to explore how to provide better juridical protection, including better intellectual property rights protection and how to evaluate patents, since this is quite problematic, as most patent transactions are not reported publicly (Gassmann, Enkel & Chesbrough, 2010). Given that one of the elements of the supportive business environment for open innovation is also more favorable tax policy, it would be prudent to objectively explore what are the best ways of lowering the tax burden on highly educated employees in Slovenia in order to promote open innovation.

CONCLUSION

Over the past few years management literature has been explaining a shift from closed to open innovation. Despite focused research on open innovation, the elements that influence its adoption by companies have not received much attention. To fill this gap, thesis contributes to the discussion on open innovation influencing factors by bringing in the perspective of business environment's impacts. The borders between the company and its environment are becoming less visible and more absorptive. As a consequence, the path of innovation into the company or out from it is becoming easier. According to this, the central idea of open innovation paradigm is that in a world of onbound knowledge transfer, company can not rely only on its own R&D, but it should also buy or license processes and inventions (for example patents) from other companies.

As a result of globalized trends it is necessary to maintain and increase competitiveness with new strategies that need to be implemented as soon as possible. One way to achieve this goal could be by the usage of more open collaboration between different stakeholders. When company opens up the innovation process it can create a demanding situation of coordinating virtual R&D teams that are more challenging to motivate and coordinate. The open innovation research field is not yet mature and so it offers a wide area in which academics, practitioners and policy makers can be active.

Open innovation could also be explained by the process of generating ideas for innovation development from customers, other companies and wider public. There is a lot of useful knowledge available in the whole world that cannot be used by individual company but it might represent a huge value for some other company or for collaboration of two companies.

The main objective of this thesis was to develop a research model of elements from the internal, narrower and broader external business environment that could impact open innovation in Slovenian companies. To achieve this objective it was necessary to first examine the different definitions and constructs of open innovation. Later, I tested this model on seven companies and seven institutions. As result, I was able to define the company's ecosystem with the intention of finding out what the necessary and needed conditions for the companies to benefit from open innovation are. In my opinion, the major push should be done on legal and governmental environment, since raising country's technological development is not possible without supportive business environment.

To create friendlier business environment for open innovation Slovenia has been forming support mechanisms. In my opinion, if Slovenia wants to be successful on long-term, supportive business environment cannot and should not be formulated just with governmental financial support but it should consists also of other factors that influence technological development, meaning: 1) corporate culture, value and reward system, 2) legislation and juridical country, 3) tax system and burden of social contributions, 4) bureaucratic barriers, 5) human resources 6) infrastructure, cost of land, and 7) funding opportunities (favorable bank loans, bank guarantees, venture capital, etc.).

In my opinion major methodological limitation lies in measuring open innovation in the Slovenian business environment, since there are only few companies that collaborate with external partners. As result, I preformed a research on a smaller sample of companies, which innovate openly. Another important limitation is the interviewees' response bias. There exist some guidelines for researchers about carrying out interviews; however less advice is available regarding problematic interviewee behaviors, such as flattery or biased responses.

Future researchers could test my model on wider geographic area, European or even worldwide. For higher validity of my research findings, I would recommend to test my model not only in more countries but also on bigger sample. In addition, model should also be tested quantitatively and only then we can discuss the generalization of results. Since the majority of interviewees pointed out the problem of low trust between companies, I believe it is important to examine different possibilities of how to improve trust of Slovenian companies in external partners and how to encourage collaboration also with competitors. What is more the impact of all elements of internal business environment on the attitude towards open innovation should be examined more in detail. Respondents pointed out also the importance of good intellectual property rights protection so this might be another interesting area to explore. And finally, due to the unfavorable tax policy researchers could study what are the best possible methods of lowering the tax burden on highly educated employees in Slovenia in an attempt to encourage open innovation.

Current Slovenian business environment, particularly for hi-tech and innovative companies, is still quite unfriendly. As mentioned in previous paragraphs, it is necessary to establish more legal protection, especially on the field of private investments protection, intellectual property rights and information confidentiality. This should be taken into consideration in further research.

In Slovenia, it is necessary to create business environment that will lead to a new culture, which will encourage open innovation and produce new educational tools for generating creative and innovative staff. In order to generate and implement innovative solutions, services, products and technologies, company needs well-educated and trained staff. Only after achieving and implementing all stated above, Slovenian economy can become competitive with the most developed economies around the world.

SUMMARY IN SLOVENE LANGUAGE (POVZETEK)

Zadnja štiri leta se svet sooča z recesijo, kakršne nismo doživeli vse od druge svetovne vojne dalje (Conway & Monaghan, 2009; Elliott, 2009; Fleming, 2009). Da bi podjetja preživela, morajo začeti inovirati (Yuen, Zeitoun & Smith, 2009). Glede na trenutno stanje gospodarstva, podjetja s celega sveta poskušajo odgovoriti na vprašanja, kot na primer: kaj lahko storimo drugače, da se takšni dogodki ne bi več ponovili in kaj lahko storimo v tem trenutku, da bi spodbudili gospodarstvo in njegovo rast? V magistrskem delu poskušam najti odgovor na vprašanje kako lahko podjetja in poslovno okolje spodbudijo učinkovito in uspešno odprto inoviranje, ki bi stimuliralo ustvarjanje novih priložnosti za rast podjetji in gospodarstva kot celote.

S premikom poudarka iz raziskovalnih in razvojnih dejavnosti znotraj podjetja k zunanjim, so akademiki začeli izpostavljati pomen odprtih inovacij za podjetja (Rigby & Zook, 2002; Christensen, Olesen & Kjaer, 2005). Ker eno podjetje ne more zaposliti vseh specialistov, morajo podjetja sodelovati in deliti svoje znanje ter spretnosti (Chesbrough, 2003a; Enkel, Gassmann & Chesbrough, 2009). Za izboljšanje inovativnosti podjetja in za skrajšanje časa, potrebnega za vstop na novi trg, je sodelovanje z zunanjimi partnerji nujno. Pomembno je odgovoriti na vprašanji kaj lahko vlada in drugi deležniki podjetja storijo in kaj je mogoče spremeniti v ekosistemu - v notranjem, ožjem in širšem zunanjem okolju, za pospešitev odprtih inovacij?

Mnoga podjetja so v zadnjih nekaj letih začela odprto inovirati, da bi povečala inovativnost (Finger & Stucki, 2009; Lindegaard, 2010; Sousa, 2008). Chesbrough (2003b, str. 37) trdi, da je "osrednja zamisel odprtih inovacij v tem, da si podjetja danes ne morejo več privoščiti, da bi se v celoti zanašala na svoje lastne raziskovalne in razvojne dejavnosti, ampak morajo namesto tega kupiti ali licencirati procese ali izume (na primer patente) od drugih podjetij, inštitutov, dobaviteljev in strank". Vse notranje inovacije in izumi, ki se ne morejo uporabiti v podjetju, bi bilo potrebno ponuditi na trgu s pomočjo licenciranja, skupnih vlaganj in spin-offov (Sichelman, 2010).

V zadnjih letih so znanstveniki izvedli veliko akademskih raziskav na temo inovacij (Jaffe, 1989; Adams, 1990; Nelson & Rosenberg, 1993; Mansfield, 1998; Cohen, Nelson & Walsh, 2002). Potem, ko so odprte inovacije teoretično opredelili, so izvedli tudi nekaj empiričnih študij na to temo. Večina izmed njih preučuje majhen vzorec ali pa je osredotočena zgolj na visoko-tehnološka podjetja iz izbranih držav – v večini primerov ZDA (Birkinshaw et al., 2008).

Pri raziskovanju področja odprtih inovacij je najprej potrebno določiti koncept odprtega inoviranja, saj je koncept odvisnosti od odprte inovativnosti ena izmed najmanj razumljenih in raziskovanih tem (Huizingh, 2010). Poleg tega je potrebno izvesti več raziskav o notranjem in zunanjem poslovnem okolju ter lastnostih, ki vplivajo na poslovanje družbe. Raziskave bi morale biti sprva kvalitativne, da lahko bolje razumemo trenutno situacijo in šele nato se lahko izvede kvantitativne analize.

V zadnji raziskavi Boston Consulting Group-a (2010) je 26% vseh managerjev, ki sodelujejo v raziskavi, opredelilo odprte inovacije kot njihovo glavno prednostno nalogo in 45% vprašanih je dejalo, da so odprte inovacije ena izmed njihovih glavnih treh prednostnih nalog v podjetju. Vendar pa je Rangus (2010) v svoji raziskavi ugotovila, da v večini slovenskih podjetjih, tako visoko-tehnoloških kot tudi nizko-tehnoloških, trenda uvajanja koncepta odprtih inovacij še vedno ni mogoče zaslediti. Odprto inoviranje je lahko težavno, saj pogosto managerji ne razumejo procesa inoviranja, nimajo ogrodja znotraj katerega lahko njihova podjetja uspešno ponudijo inovativne izdelke ali uvedejo inovativne procese (Cooke, 2005; Dodgson, Gann & Salter, 2006; Dahlandera & Gann, 2010). Zato je potrebno razviti to ogrodje, ki bo pomagalo podjetjem razumeti svoje notranje in zunanje poslovno okolje in kako lahko le-to izkoristijo za spodbudo odprtih inovacij.

Širši obseg mojega dela je s področja managementa, znotraj katerega se osredotočam na tematiko managementa inovacij, svojo pozornost pa posvečam predvsem elementom poslovnega okolja, ki lahko vplivajo na odprto inovativnost v podjetjih. Raziskovalna tema mojega magistrskega dela je torej konstrukt kontekstualnih spremenljivk raziskovalnega modela odprtih inovacij. Glavni cilj naloge je bil razviti raziskovalni model elementov iz notranjega, ožjega in širšega zunanjega okolja podjetja, ki lahko vplivajo na odprte inovacije v slovenskih podjetjih.

Za dosego tega cilja sem najprej teoretično konceptualizirala elemente poslovnega okolja, ki bi lahko vplivali na odprto inovativnost v slovenskih podjetjih. Zatem sem izvedla kvalitativno empirično vrednotenje mojega teoretičnega modela, kar lahko služi kot podlaga za prihodnje študije. Do sedaj je bilo izvedenih le nekaj empiričnih študij na temo odprtih inovacij (Chesbrough, 2006; Finger & Stucki, 2009; Lindegaard, 2010; Sousa, 2008; Enkel & Gassmann, 2007), zato Schroll (2009a) predlaga izvedbo obsežne empirične študije na svetovni ali vsaj na evropski ravni. Moja kvalitativna raziskava je obsegala intervjuje s sedmimi podjetji in sedmimi institucijami. Na podlagi ugotovitev sem opredelila ekosistem slovenskih podjetij z namenom, da ugotovim kako lahko podjetje izkoristi ugodnosti odprtega inoviranja. Po mojem mnenju je potrebnih največ sprememb opraviti na pravnem in političnem okolju, saj ni mogoče izboljšati tehnološkega razvoja brez močnega podpornega poslovnega okolja.

Da bi ustvarili prijaznejše poslovno okolje za odprte inovacije so bili v Sloveniji vzpostavljeni podporni mehanizmi. V kolikor želi biti Slovenija uspešna na dolgi rok, podporno poslovno okolje ne more in ne sme biti oblikovano zgolj z vladno finančno podporo, vendar mora vsebovati tudi druge elemente, ki vplivajo na tehnološki razvoj, kar pomeni: 1) organizacijska kultura, vrednote in sistem nagrajevanja, 2) zakonodaja, 3) davčni sistem in socialni prispevki,

4) birokratske ovire, 5) človeški viri 6) infrastruktura, stroški zemljišč in 7) možnosti financiranja (ugodna bančna posojila, bančne garancije, tvegan kapital, itd.).

Menim, da eno izmed večjih metodoloških omejitev v mojem magistrskem delu predstavlja merjenje odprte inovativnosti v slovenskem poslovnem okolju, saj le nekaj podjetij sodeluje z zunanjimi partnerji. Posledično sem izvedla raziskavo na manjšem vzorcu podjetij, ki odprto inovirajo. Druga pomembna omejitev, ki jo je potrebno upoštevati je morebitna pristranskost sogovornikov. Obstajajo nekatere smernice za pomoč raziskovalcem pri izvajanju intervjujev, vendar je v povezavi s problematičnim vedenjem intervjuvancev, kot je na primer pristranskost ali laskanje, na voljo manj rešitev.

Kot sem že omenila, vsi elementi poslovnega okolja v zvezi z odprtim inoviranjem še niso dokončno opredeljeni v literaturi. To področje se še vedno raziskuje in razvija, posledično pa prihaja do številnih novih definicij in konceptov. Odprte inovacije so začeli empirično preučevati šele v zadnjih letih in je zato tudi manj raziskav s tega področja (Camarinha-Matos, Paraskakis & Afsarmanesh, 2009). Zelo težko je vzpostaviti univerzalen metrični sistem, ki bi lahko ocenjeval uspešnosti odprtih inovacij. Konstrukt le teh se še vedno razvija in bo potrebno še nekaj dela kot tudi časa pri opredelitvi tako teoretičnega ozadja, kot tudi empiričnih potrditev. Avtorji s tega področja izražajo potrebo po obsežnih empiričnih študijah in izpostavljajo vpliv pomanjkanja empiričnih raziskav, ki so potrebne za vzpostavitev ustreznega poslovnega okolja za spodbujanje odprtih inovacij (Enkel & Gassmann, 2007; Sousa, 2008; Finger & Stucki, 2009; Schroll, 2009a; Lindegaard, 2010).

Kljub pozornosti, ki so jo odprte inovacije deležne v zadnjih letih, je na tem področju še vedno veliko vrzeli v znanju. Prav zato bi se morali raziskovalci posvetiti različnim raziskovalnim modelom in ne zgolj slediti akademskim pionirjem s tega področja. Za prihodnje raziskave vidim priložnost v testiranju mojega modela na širšem geografskem območju, na evropski ali celo svetovni ravni. Za večjo verodostojnost ugotovitev moje raziskave, pa vidim priložnost v testiranju mojega modela ne le v več državah, temveč tudi na večjem vzorcu znotraj posammezne države. Da bi dobili popolno sliko o tem, kaj poslovno okolje že ponuja za spodbujanje odprtih inovacij in kaj je mogoče še storiti za promocijo odprtih inovacij znotraj in med organizacijami na ravni notranjega, ožjega in širšega zunanjega poslovnega okolja bi morali moj model testirati tudi kvantitativno.

Ker so intervjuvanci opozorili na problem nezaupanja med poslovnimi partnerji, verjamem da je v prihodnosti potrebno preučiti različne možnosti, kako bi lahko izboljšali zaupanje slovenskih podjetij v odnose z zunanjimi partnerji ter kako bi lahko spodbudili sodelovanje s konkurenti. Poleg tega bi bilo potrebno bolj podrobno preučiti učinek vseh elementov notranjega poslovnega okolja na odnos do odprtega inoviranja. Intervjuvanci so poudarili tudi pomen dobre zaščite intelektualne lastnine. In navsezadnje, menim da bi v Sloveniji lahko zaradi neugodne davčne politike raziskovalci preučili kateri so najboljši možni načini za znižanje davčne obremenitve visoko izobraženih zaposlenih z namenom promocije odprtega inoviranja.

Trenutno je slovensko poslovno okolje, zlasti za visokotehnološka in inovativna podjetja, še vedno precej neprijazno. Potrebno je vzpostaviti boljšo pravno zaščito, še posebej na področju varovanja privatnih naložb, zaščite pravic intelektualne lastnine in varovanja podatkov. V Sloveniji je treba ustvariti poslovno okolje, ki bo baza za vzpostavitev nove kulture, ki bo spodbujalo odprto inoviranje in generiralo ustvarjalne in inovativne zaposlene. Za ustvarjanje in implementacijo inovativnih rešitev, storitev, izdelkov in tehnologij družba potrebuje dobro izobraženo in usposobljeno delovno silo. Šele ko bomo dosegli in uspešno implementirali vse navedeno, lahko slovensko gospodarstvo postane konkurenčno na svetovnih trgih.

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APPENDENCES

TABLE OF APPENDENCES

Appendix 1 – Questionnarie for companies (in Slovene language)

Zaprto inoviranje, po rezultatih številnih novejših raziskav iz prakse, ni več smiselno niti za zelo velika podjetja in še manj za manjša. Rešitev je, kot predlagajo strokovnjaki, korenita inovacija inoviranja; torej razvijanje inovacij ne več zgolj iz lastnega raziskovanja temveč vključitev zunanjih partnerjev v inovacijski proces. Ker pa na podjetje in njegovo inovacijsko strategijo močno vpliva okolje, v katerem podjetje deluje, bi rada ugotovila kateri so glavni dejavniki notranjega in zunanjega poslovnega okolja v Sloveniji, ki spodbujajo oziroma zavirajo odprto inoviranje. Moj namen je ugotoviti, kaj slovensko poslovno okolje že ponuja podjetjem, kaj podjetja sama storijo za odprto inoviranje in kaj je potrebno dodati oziroma kaj spremeniti, izboljšati.

Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?

1. *a) Če je odgovor da, s kom in kako?*

1. *b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?*

2. Zakaj ste se v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju? (Kaj so glavne prednosti: znižuje stroške razvoja, skrajša razvojni čas, itd.).

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?

4. **Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?**

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno?
S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?

1. *a) Če je odgovor da, s kom in kako?*
1. *b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?*

[*C3M*] Tesno sodelujemo pri inoviranju z zunanjimi partnerji v vseh fazah razvoja-s tujimi partnerji in s slovenskimi partnerji. Pomemben del njihovega poslovanja predstavlja mednarodno sodelovanje s tujimi podjetji in institucijami s katerimi se prijavljajo na mednarodne razpise.

2. Zakaj ste se v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju? (Kaj so glavne prednosti: znižuje stroške razvoja, skrajša razvojni čas, itd.).

[*Tomaž Rodi*č] Z zunanjimi partnerji smo se odločili sodelovati zaradi nižjih stroškov razvoja, dodatnih človeških virov in znanja, posledično tudi krajšega razvojnega časa, itd. Poleg tega C3M potrebuje zunanje tuje partnerje za prijavo na evropske projekte, kot na primer: **7. OKVIRNI PROGRAM, 6. OKVIRNI PROGRAM** (FP6-NMP-STREP-POLYCOAT,2004-2006; FP6-IST/NMP-VIF-CA, 2004-2008; FP6-NMP-STREP-PROFORM, 2004-2007; FP6- IP- TUNCONSTRUCT, 2005-2008; FP6-NMP-STREP-NANOBIOTACT, 2006-2009; FP6-IST/STREP-CoVES, 2006-2008), **5. OKVIRNI PROGRAM** (FP5/GROWTH-ENLUB, 2002-2006; FP5/GROWTH-IMPRESS, 2001-2005;FP5/GROWTH-COLT, 1999-2003; FP5/GROWTH-SCANMAP, 1999-2003), **BRITE/EURAM** (FATLIFE,1997-2001; SOFT,1997-2000; PREDWEAR), **EUREKA** (EUREKA-FORMING, 1998-2001; EUREKA-FACTORY-DECOFOR E! 2531, 2001-2005; EUREKA-FORMING E! 1869, 1998-2001; EUREKA-FAMOS-EFFORT E! 668, 1992-1997), **COST, COPERNICUS, TEMPUS** (COST 526 APOMAT, 2001-2004; COST 512 – MMSP; COPERNICUS-OPT , 1997-1999; TEMPUS-ACEM, 1991-1994), **ARRS** (J2-7220, 2005-2008; L2-4466, 2002-2005; L2-7234, 2005-2008; Z2-3200, 2001-2004).

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?

[*Tomaž Rodi*č] Do danes nimamo nobenih slabih dosedanjih izkušenj z odprtim inoviranjem, je pa potrebno veliko časa in znanja posvetiti pravnim podlagam, pogodbam, jasnim obrazložitvam dela. Vsekakor je izjemnega pomena intelektualna lastnina in pravice do le te. Tu tudi vidijo mogoče največje potencialno grožnjo oz. zaplete.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?

[*Tomaž Rodi*č] Mi smo majhno podjetje (manj kot 10 zaposlenih) tako, da že sama organizacijska struktura spodbuja odprto inoviranje, saj ni dovolj zaposlenih, da bi pokrivali vsa potrebna znanja. Takšen način dela (povezovanje in sodelovanje z drugimi podjetij) zasleduje tudi naša strategija. Poleg tega, pa pridobivamo sredstva, z javnimi slovenskimi in tujimi razpisi, za kar je povezovanje z zunanjimi partnerji nujno. Bi pa izpostavil tu problem nekaterih večjih podjetij, saj bi se tudi slednja morala reorganizirati in preurediti svojo strukturo v bolj horizontalno oziroma matrično-funkcijsko. Prav tako, ju za dolgoročni uspeh nujno potrebna jasna strategija z dolgoročnimi cilji.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?

[*Tomaž Rodi*č] C3M v glavnem sodeluje s kupci. Z dobavitelji pri svojem poslu skoraj ne sodelujemo, saj večinoma ni nikogar v verigi vrednosti pred nami, temveč največkrat mi sami predstavljamo prvi člen.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?

[*Tomaž Rodi*č] Pri dejavnikih zunanjega okolja bi izpostavil predvsem politično okolje. Le to je za C3M najbolj pomembno saj, kot sem že omenil, zelo veliko sodelujemo z zunanjimi partnerji na raznih razpisih. Naša sredstva pridobivamo iz EU in slovenskih razvojnih politik in programov.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno?
S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?
[*Tomaž Rodič*] Menim, da država veliko vlaga in dela na področju podpiranja podjetij, njihovega razvoja, inoviranja in povezovanja. Bi pa bilo nujno potrebno določiti prioritetna področja, na katera se bo Slovenija v prihodnosti fokusirala, saj lahko le s specializacijo dosežemo neko konkurenčno prednost pred ostalimi.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Tomaž Rodič*] /.

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?
1.a) Če je odgovor da, s kom in kako (obstoječimi kupci, potencialnimi kupci, konkurenti, dobavitelji, trgovci, javno financiranimi raziskovalnimi institucijami, vladnimi agencijami, drugo)
1. b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?
[*Sonja Klopčič*] V Trimu sodelujemo s slovenskimi in tujimi instituti. Največkrat sodelujemo z zunanjimi partnerji tako, da ponudimo problem, ga predstavimo v mednarodni mreži in poiščemo najboljšo rešitev. Povezujemo se večinoma v fazi, ko že imamo izoblikovan produkt in iščemo rešitve zanj.

2. Zakaj ste se v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju?
[*Sonja Klopčič*] Po mojem mnenju je ena izmed najpomembnejših prednosti zniževanje stroškov, potem skrajšan čas razvoja produkta, saj razvoj po naših izkušnjah z odprtim inoviranjem pospešimo razvoj in tretjič, zavedamo se, da v Trimu nimamo vseh potrebnih znanj za razvoj novih inovativnih produktov.

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?
[*Sonja Klopčič*] Sama vidim največje tveganje pri medsebojnem razumevanju partnerjev, ali si delijo isto mnenje o tem kaj je in kaj ni izvedljivo, katere so njihove glavne kompetence in ali se bodo uspeli najti skupen jezik, kompromis ter bodo dosegli skupno rešitev. Navsezadnje, eno izmed večjih tveganj definitivno predstavlja deljenje intelektualne lastnine in nato delitve prihodkov.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?
[*Sonja Klopčič*] Trimova strategija definitivno spodbuja odprto inoviranje. Eden izmed zaviralnih faktorjev bi lahko bila dokaj nizka stopnja zaupanja v zunanje partnerje - ali bodo le ti izkoristil naše zaupanje v svoj prid ali bodo »igrali« pošteno in ne bodo ukradli naše ideje. Menim pa, da se bo skozi uspešne projekte zaupanje okrepilo, s prevelikim deležem neuspešnih povezovanj pa se bo to zaupanje še povečalo.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?
[*Sonja Klopčič*] V Trimu sodelujemo z dobavitelji tako, da prirejamo zanje delavnice na določeno temo. Od kupcev pa potrebujemo rešitve za nastale probleme - s stalnimi kupci razvijamo nove rešitve, z novimi pa je takšno sodelovanje težje dosegljivo. Zato imamo v Trimu tehnično podporo za kupce, kjer zbirajo rešitve. S takšnimi problemi pa se ukvarja tudi naš direktor za strateško inoviranje, ki sodeluje s kupci pri iskanju novih rešitev. Veliko sodelujemo tudi z arhitekti, saj le-ti uporabljajo naše produkte. Tako zanje podeljujemo Trimove arhitekturne nagrade (uveljavljeni arhitekti, ki so na inovativen način uporabili Trimove proizvode), Trimov urban crash (Trimo zagotovi izgradnjo zmagovalnega design-a študentov arhitekture) in Trimove raziskovalne nagrade (diplomska, magistrska in doktorska dela). To so sistematični pristopi za pridobitev novih idej.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?
[*Sonja Klopčič*] V Trimu poskušamo aktivno sodelovati v vseh podokoljih – moj kolega, Miloš Ebner, tako sodeluje pri snovanju Nacionalnega Inovacijskega Sistema. V Trimu pogrešamo predvsem državno pomoč pri trženju na tujih trgih, medtem ko menimo, da imamo pri raziskavah in razvoju več podpore. Tako smo v Trimu prisiljeni prevzemati nase tveganja za vstope na tuje trge, kjer so v naši industriji izredno zaščiteni vstopi, četudi gre za države znotraj EU (razni certifikati), Rusija, itd. Naše podjetje ne občuti dovolj podpore pri vseh fazah odprtega inoviranja.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno? S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?
[*Sonja Klopčič*] Menim, da je potrebna večja pravna zaščita – ureditev pravic intelektualne lastnine, boljša informacijske podpora pri iskanju novih rešitev (bolj avtomatizirano vključevanje širšega kroga ljudi, sočasno reševanje problemov, ne paralelno kot je sedaj). Po izkušnjah sodeč je rating Slovenije v svetu zelo pomemben pri odprtem inoviranju. Zunanji partner mora dojeti slovensko podjetje kot kredibilnega, enakovrednega partnerja, trenutno pa to ni tako. Zato je potrebno je slovensko gospodarstvo re-pozicionirati na področju inovacij in design-a.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Sonja Klopčič*] /.

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?
1.a) Če je odgovor da, s kom in kako (obstoječimi kupci, potencialnimi kupci, konkurenti, dobavitelji, trgovci, javno financiranimi raziskovalnimi institucijami, vladnimi agencijami, drugo)
1. b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?
[*Mark Pleško*] Naše podjetje največ sodeluje s COBIK-om in z dvema kompetenčnima centroma smo pa v preteklosti veliko sodelovali z zunanjimi partnerji na mednarodnih projektih. Primeri takšnih projektov so bili na primer sodelovanje z italijanskim podjetjem za podjetje v Mariboru (naš dobavitelj), bili smo eden izmed partnerjev v mednarodnem internetnem projektu, delali smo na projektu RIP in 6. okvirnem programu v sodelovanju z zunanjimi partnerji. Takšno sodelovanje pa se v našem podjetju pojavlja v vseh fazah razvoja.

2. Zakaj ste se v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju?
[*Mark Pleško*] Kot glavne prednosti bi omenil predvsem dostop do zunanjega vira znanja, vendar je v našem primeru največkrat prišlo do sodelovanja z zunanjimi partnerji prav zaradi zahtev v razpisnih pogojih.

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?
[*Mark Pleško*] Največja slabost pri sodelovanju je po naših izkušnjah dejstvo, da se veliko zunanjih partnerjev pridruži projektu zgolj iz željo po dobičku, posledično to povzroča probleme pri zaupanju, delitvi dela in medsebojnih odnosih.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?
[*Mark Pleško*] Strategija našega podjetja in organizacijska struktura vsekakor spodbujata odprto inoviranje saj imamo horizontalno organizacijsko strukturo. Prav tako so močna spodbuda dodatna materialna in finančna sredstva za razvoj produkta, ki jih lahko pridobimo iz raznih razpisov. K zunanjemu sodelovanju nas je velikokrat pripeljal tudi »social network«, saj smo preko novih poznanstev spoznali nove ljudi in našli nove izzive. Tehnologija mora v vsakem podjetju omogočati in spodbujati inoviranje in konkurenčnost. Zaviralca odprtega inoviranja morda vidim zgolj v številu zaposlenih inženirjev v našem podjetju, ki radi prevzamejo »stvari« v svoje roke in najbolj zaupajo svojim izdelkom (prisoten je mogoče delček NIH sindroma).

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?
[*Mark Pleško*] Povezujemo se predvsem z dobavitelji in kupci. Primer odprtega inoviranja v sodelovanju z dobaviteljem je bil že prej omenjeni projekt z mariborskim podjetjem. Prav tako je glavnina naših izdelkov in storitev razvita v sodelovanju s končnimi kupci.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?
[*Mark Pleško*] Menim, da vladne politike spodbujajo odprto inoviranje, vendar smo Slovenci še vedno preveč zaprti, še vedno nas je strah razkriti informacije zunanjim partnerjem.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno?
S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?
[*Mark Pleško*] Kot državljan in ne podjetnik menim, da bi država morala manj posegati v gospodarstvo in ponujati manj pomoči podjetjem. Pustiti bi nam morala bolj proste roke, tako bi preživela tista podjetja, ki

si to zaslužijo, tista, ki imajo prihodnost tudi brez finančne podpore države. Tako bi se rešila podjetij, ki se prijavljajo na razpisa zgolj zaradi njihove »finančne požrešnosti«. Sodelovanje s takšnimi podjetji pa za nas in še kakšno drugo podjetje, ni najbolj stimulativno. Rešitev za podporo inovativnosti in odprtemu inoviranju vidim mogoče tudi v zniževanju davkov na visoko izobražene. Stvari bi se morale razvijati, ker obstaja želja po tem, ker so potencialno dobri produkti, storitve in ne zato, ker dobiš veliko sredstev, če to razvijaš.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Mark Pleško*] /.

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?

1. *a) Če je odgovor da, s kom in kako?*
1. *b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?*

[*Peter Baloh*] V Bisolu veliko sodelujemo veliko z zunanjimi partnerji, vendar pa nimamo strukturiranega procesa inovacij. To bi bilo potrebno spremeniti, da bi lahko z novimi idejami še hitreje prišli na trg. Sodelujemo z zunanjimi v smislu ustvarjanja idej skupaj s kupci, predvsem ko pridejo kupci k nam z nekim specifičnim problemom. Naš produkt je tehnološko precej zahteven in je zato težko pridobiti input s strani kupca. Mi želimo da naš produkt čim bolje in tem dlje deluje. Da bi to dosegli težko pridobimo koristne informacije s strani kupcev temveč so nam v pomoč predvsem z dobavitelji. Velikokrat mi predlagamo rešitve dobaviteljem, včasih pa nam tudi oni predlagajo izboljšave. V ostalih fazah (implementacija in izvajanje) pa je veliko več sodelovanja s kupci. Pripravimo jih na neke nove značilnosti produkta (npr. priprava specifičnih navodil za kupce in inštalaterjev).

2. Zakaj ste v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju? (Kaj so glavne prednosti: znižuje stroške razvoja, skrajša razvojni čas, itd.).

[*Peter Baloh*] Time to market oz. skrajšanje razvojnega časa je definitivno ena izmed prednosti odprtega inoviranja. Ko nekaj razvijaš z zunanjim deležnikom, bo le ta hitreje to sprejel in začel uporabljati. Definitivno se posledično zmanjšajo tudi stroški, saj na primer niso potrebna dodatna izobraževanja, ni potrebno zaposlovati dodatnih ljudi.

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?

[*Peter Baloh*] Kot eno glavnih groženj bi izpostavil problem, ko lahko tvoj partner v razvoju produkta postane tvoj konkurent. Četudi se zaščitiš s pogodbo in zaščitiš intelektualno lastnino, lahko partner malenkost modificira produkt in se ogne členom v pogodbah. Za dobro pravno zaščito je včasih potrebno tudi veliko plačati, vendar se pozneje velikokrat izkaže, da je bilo vredno. Včasih se zgodi, da ugotovimo, da določene stvari (ne naše core business dejavnosti) nepotrebno razvijamo znotraj podjetja, saj lahko le to najdemo na trgu hitreje in ceneje. Z napakami se seveda učimo in kar že obstaja na trgu poskušamo tudi v našem poslovanju uporabiti. Velikokrat imajo naši eksperti mnenje, da so njihove rešitve najboljše.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?

[*Peter Baloh*] Strategija, vrednote in kultura so definitivno glavni pobudniki odprtega inoviranja v Bisolu. Želimo spodbuditi vse zaposlene k sodelovanju, k iskanju čim večje kakovosti. Tudi ostala slovenska podjetja bi morala v svoje vrednote vključiti kreativnost, inovativnost, zaupanje, itd. Dobra ideja pa po izkušnjah ni vedno naša temveč je plod dobrega zunanjega sodelovanja. Naša organizacijska struktura je relativno horizontalna in smo fleksibilni. Tok informacij je omogočen in hitro dostopen vsem. Zaposlujemo tudi inženirje z visokimi izobrazbami, ker menimo da imajo večjo širino in sposobnost analize ter zaznavanja alternativ. Kar bi morali v BISOLu in mnogih drugih slovenskih podjetjih spremeniti oziroma izboljšati sisteme nagrajevanja in spodbujati inovativnost zaposlenih.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?

[*Peter Baloh*] Konkurenca nas prisili v odprto inoviranje, saj moramo iskati nove poti za zniževanje stroškov in večanje kakovosti. Diferencirati se moramo s ceno in kvaliteto. Kot sem že prej omenil večino svojih rešitev razvijamo v sodelovanju z dobavitelji in v manjši meri tudi s kupci.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?

[*Peter Baloh*] Država spodbuja odprto inoviranje s subvencijo, saj ti omogoča dokaj stabilno poslovno okolje. Trenutno gospodarsko stanje ni najbolj rožnato. Ko se bo le-to izboljšalo se bo vzporedno izboljšala tudi gospodarska rast. Eden od načinov za spodbuditev potrošnje je nižanje obrestnih mer. Da pa podjetje ostaja konkurenčno tudi v prihodnosti mora že danes razvijati nove produkte, rešitve v sodelovanju z zunanjimi partnerji. Tehnološko okolje je prav tako izrednega pomena, saj se s spremembo tehnologije poveča potreba po sodelovanju z zunanjimi partnerji.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno?
S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?

[*Peter Baloh*] Sam vidim vlogo drža predvsem v zagotavljanju stabilnega poslovnega okolja in ne z direktnim vmešavanja v gospodarstvo. To lahko dosežejo z ustreznimi davčnimi politikami in pravno zaščito. Za odprto inoviranja mora država podjetjem pustiti proste roke in se z zakoni ne vmešavati v njihovo delovanje. Menim, da je vpliv okolja na podjetje bolj neposreden, glavni vzvodi za odprto inoviranje morajo priti s strani podjetja. Sam v svojem podjetju ne moreš imeti največjih strokovnjakov iz vseh področji in prav zato je nujno potrebno, da se odpreš in sodeluješ z zunanjimi partnerji.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

[*Peter Baloh*] "Open yourself".

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?

1. *a) Če je odgovor da, s kom in kako (obstoječimi kupci, potencialnimi kupci, konkurenti, dobavitelji, trgovci, javno financiranimi raziskovalnimi institucijami, vladnimi agencijami, drugo)*
1. *b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?*

[*BIA Separations*] Da, Bia Separations tesno sodeluje z zunanjimi partnerji že v fazi ustvarjanja idej in nato skozi celoten proces do produkta na trgu.

2. Zakaj ste v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju?

[*Aleš Štrancar*] Osebno vidim največjo prednost pri odprtem inoviranju v združevanju različnih znanj, izkušenj, opreme, povezav in posledično se zniža tudi cena lastnega razvoja.

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?

[*Aleš Štrancar*] Menim, da bi lahko največji problem lahko predstavljalo odtekanje know-how-a in idej. Pred ostalimi grožnjami se lahko pravno zaščitimo.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?

[*Aleš Štrancar*] Odprto inoviranje v naši industrij trenutno najbolj ovirajo finančna sredstva, delno pa tudi vrednote in vrtičkarstvo.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?

[*Aleš Štrancar*] Na odprto inoviranje v naši industriji vplivajo predvsem nova podjetja na trgu, saj so bolj prilagodljiva in željna inoviranja.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?

[*Aleš Štrancar*] Iz širšega zunanjega poslovnega okolja občutimo največji vpliv politike na gospodarstvo. Po mojem mnenju se politika v te zadeve ne bi smela vmešavati, temveč pustiti podjetjem proste roke in tako bi preživela zgolj tista, ki imajo potencial in si to zaslužijo. Ekonomska moč države je odvisna predvsem od stopnje njene tehnološke razvitosti. Finska in Irska sta se še pred dvema desetletjema spopadali s hudo gospodarsko krizo, danes pa spadata med najbolj razvite prav zaradi intenzivne podpore inovativnemu in tehnološkemu podjetništvu. Potrebno je poudariti, da se tehnološko zaostajanje na ekonomski ravni kaže z večletnim zamikom, zato brez preskoka na zahtevne in visokotehnološke izdelke ter storitve Sloveniji v nekaj letih grozi gospodarsko nazadovanje in posledično gospodarski kolaps.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno? S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?

[*Aleš Štrancar*] Velik pozitiven vpliv bi po mojem mnenju lahko imela bolj ugodna davčna politika, ki bi spodbujala posameznike in podjetja, da investirajo; banke bi morale ponujati ugodni bančne kredite; ponudba tveganega kapitala in drugih virov financiranja, ki spodbujajo tvegane projekte bi se morala bistveno povečati. Menim pa, da bi bilo potrebno prepovedati državam, da preko ministrstev ali agencij plasirajo sredstva za te namene. Razumem, da je njihov namen spodbuditi gospodarstvo, v resnici pa velikokrat dosežejo ravno nasprotno.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

[*Aleš Štrancar*] Moje osebno mnenje je, da večja kot je vloga države pri neposrednem spodbujanju in financiranju tovrstnih procesov, večja je verjetnost korupcije in manjša je možnost uspeha. Prijazno okolje

zdaleč ni le količina sredstev, namenjenih za razvoj in raziskave, ampak seštevek in so-vpliv vseh dejavnikov, ki vplivajo na tehnološki razvoj. Država bi morala skrbeti zgolj za učinkovito zakonodajo, ki spodbuja investicije privatnega sektorja in skrbi, da ne prihaja do zlorab. V kolikor do teh le pride bi jih država morala hitro in ostro kaznovati.

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?

1. *a) Če je odgovor da, s kom in kako?*
1. *b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?*

[*Robert Žerjal*] Da, mi sodelujemo z zunanjimi partnerji, najbolj pogosto s kupci, saj je naš produkt zahteven in ga je včasih potrebno modificirati po želji kupca. Pri razvoju produkta sodelujemo seveda tudi z našimi razvojnimi dobavitelji, raziskovalno-razvojnimi institucijami (IJS) in izobraževalnimi institucijami (fakultetami). Povezujemo pa se predvsem na nivoju definiranja zasnove.

2. Zakaj ste se v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju?

[*Robert Žerjal*] Glavne razloge za odprto inoviranje vidim predvsem v dostopu do specifičnega know-how-a, ki ga v našem podjetju nimamo. Posledično pa se skrajša tudi razvojni čas.

3. Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?

[*Robert Žerjal*] Kot glavno grožnjo bi izpostavil predvsem zaščito intelektualnih pravic (zaščititi poslovno skrivnost). Odtekanje pomembnih informacij in know-how-a h konkurentom predstavlja tudi pomembno oviro pri odprtem inoviranju. Za reševanje le tega problema uporabljamo NDA pogodbo.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?

[*Robert Žerjal*] Naša strategija spodbuja sodelovanje in mreženje tako znotraj skupine Iskra kot tudi z zunanjimi. Iskra ima funkcijsko-matrično strukturo, kjer vodja projekta koordinira funkcijske skupine projekta. Funkcijski vodje pa odgovarjajo za načrtovanje in izvedbo. Naš cilj je spodbuditi zaposlene k sodelovanju, tako internem kot zunanjem.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje?

[*Robert Žerjal*] Kot sem že prej omenil, glede na naravo našega proizvoda največ sodelujemo s kupci. Tu se poskušamo prilagajati njihovim potrebam in skupaj z njimi razviti produkt, ki bo zadovoljil vse njihove zahteve. Da to dosežemo moramo sodelovati tudi z dobavitelji pri razvoju in izdelavi sestavnih delov že v začetnih fazah razvoja (npr. mikroelektronski čipi). Prav tako smo na določenem projektu sodelovali tudi s podjetjem, ki nam predstavlja konkurenco na drugem področju našega poslovanja.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje državne politike spodbujajo ali zavirajo odprto inoviranje?

[*Robert Žerjal*] Pri elementih širšega zunanjega okolja bi izpostavil predvsem vpliv političnega okolja, ki je za nas izjemno pomemben. V zadnjem času se je po mojem mnenju odprto inovacijska klima zelo izboljšala , žal pa trenutna finančna kriza ni najbolj ugodna za gospodarsko okolje. Poleg tega je občutna še visoka davčna obremenitev – predvsem za visoko izobražene zaposlene. Prav tako v našem socialnem okolju inženirji še vedno ne prejmejo dovolj spoštovanja iz okolice.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno? S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?

[*Robert Žerjal*] Država bi morala spremeniti celotno davčno zakonodajo, ki je trenutno zelo neprijazna do podjetij. Velik problem vidim tudi v lastniških strukturah, saj je večina lastnikov in managerjev zelo S-T orientirana. Ti dve spremembi sta nujno potrebni za uspešnost podjetij na L-T.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

[*Robert Žerjal*] /.

1. Ali tesno sodelujete z zunanjimi partnerji v katerikoli fazi inoviranja (ustvarjanje idej, testiranje, implementacija in izvajanje, reševanje problemov, itd.)?
1.a) Če je odgovor da, s kom in kako (obstoječimi kupci, potencialnimi kupci, konkurenti, dobavitelji, trgovci, javno financiranimi raziskovalnimi institucijami, vladnimi agencijami, drugo)
1. b) Če je odgovor ne, bi si morda želeli sodelovati, oz. zakaj ne želite?
[*Borut Šolar*] Da, Ključni partnerji ITech so:
1. kupci naročniki raziskovalne opreme-instrumentacije. Pri teh je intenzivnost sodelovanja največja. Sodelovanje je značilno po skupnem snovanju opreme. Prvi kupec navadno največ pripomore k reklamiranju na konferencah in preko objav rezultatov.
2. izvajalci posameznih podsklopov. Prevzamejo izvajanje na dokaj visoki ravni, vendar le redko prispevajo z novim znanjem (verjetno posledice prevzemanja odgovornosti)
3. proizvajalci posameznih podsklopov. Najnižja intenzivnost sodelovanja
S centri znanja in javno financiranimi raziskovalnimi institucijami so pozitivne izkušnje predvsem na dolgoročnih strateških sodelovanjih, kjer partnerji pridobijo na raziskovalni infrastrukturi in raziskovalni perspektivi projekta.

2. Zakaj ste v vašem podjetju odločili sodelovati z zunanjimi partnerji pri inoviranju?
[*Borut Šolar*] Naši proizvodi so raziskovalna oprema, ki je navadni ni moč kupiti na tržišču in je pogosto že sama po sebi znanstveni dosežek, kar pomeni da pri njenem inoviranju nastopajo znanstveniki- specialisti, ki so pogosto tudi naročniki in uporabniki.

3.Ali vidite tudi kakšne slabosti, grožnje v tem sodelovanju?
[*Borut Šolar*] Največ pasti izhaja iz prekomernega odprtja programske kode, konceptov in načrtov. Te potrebe so pogosto neosnovane in prekomerne s predpostavko, da znanstveniki potrebujejo vedenje za vse podrobnosti v namen nadgradnje in potrditev pravilnega delovanja.

4. Kateri elementi notranjega poslovnega okolja vplivajo (spodbujajo, zavirajo) na odprto inoviranje v vaši industriji?
[*Borut Šolar*] Na odprto inoviranje po mojem mnenju v ITech najbolj vplivajo strategija, vrednote in organizacijska struktura.

5. Kateri elementi ožjega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji?
[*Borut Šolar*] Iz ožjega zunanjega okolja čutimo največji vpliv in sodelovanje prav s kupci.

6. Kateri elementi širšega zunanjega poslovnega okolja vplivajo na odprto inoviranje v vaši industriji? Ali sedanje vladne politike spodbujajo ali zavirajo odprto inoviranje?
[*Borut Šolar*] Iz širšega zunanjega poslovnega okolja občutimo največji vpliv politike na gospodarstvo. Dosedanja politika ni spodbujala odprtega inoviranja, ker je bila ves čas usmerjena v reševanje odmirajočih sistemov, tako da ji za vse ostalo zmanjkalo virov. Z različnimi projekti, kot so na primer centri odličnosti pa upamo, da se bodo te stvari izboljšale.

7. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje v vaši panogi ali gospodarstvu na splošno? S kakšnimi aktivnostmi bo država najbolj verjetno dosegla pozitivne rezultate pri procesu odprtih inovacij?
[*Borut Šolar*] Izobraževanje, spodbude pri zaposlovanju in kreiranju razvojnih in raziskovalnih skupin v podjetjih in financiranje projektov s povratnimi viri.

8. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Borut Šolar*] /.

Appendix 2 – Questionnarie for institutions (in Slovene language)

Zaprto inoviranje, po rezultatih številnih novejših raziskav iz prakse, ni več smiselno niti za zelo velika podjetja in še manj za manjša. Rešitev je, kot predlagajo strokovnjaki, korenita inovacija inoviranja; torej razvijanje inovacij ne več zgolj iz lastnega raziskovanja temveč vključitev zunanjih partnerjev v inovacijski proces. Ker pa na podjetje in njegovo inovacijsko strategijo močno vpliva okolje, v katerem podjetje deluje, bi rada ugotovila kateri so glavni dejavniki notranjega in zunanjega poslovnega okolja v Sloveniji, ki spodbujajo oziroma zavirajo odprto inoviranje. Moj namen je ugotoviti, kaj slovensko poslovno okolje že ponuja podjetjem, kaj podjetja sama storijo za odprto inoviranje in kaj je potrebno dodati oziroma kaj spremeniti, izboljšati.

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

5. Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?
[*Maja Makovec Brenčič*] Izjemno pomembna. Gre za eno vodilnih visokošolskih izobraževalnih institucij v Sloveniji, kjer so vsi poslovni programi (pa tudi ekonomski) namenjeni tudi vzpodbujanju študentov in poslovnežev h kreativnemu in inovativnemu razmišljanju. Izvajamo tudi metode poučevanja, ki to še posebej podpirajo, kot so npr. d.school, problemsko učenje na različnih poslovnih področjih, vzpodbujamo pripravo poslovnih načrtov in projektov, ki neposredno rešujejo konkretne izzive podjetij. Prav tako se skozi različne oblike sodelovanja (konference, okrogle mize, raziskovalne projekte, posebne študije itd.) soočamo in sodelujemo z vsemi deležniki tako, da odpiramo in raziskujemo izzive razvoja slovenskih podjetij in gospodarstva.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?
[*Maja Makovec Brenčič*] Znižuje stroške razvoja, skrajša razvojni čas, itd. Posebej pomembno pa je to, da odprto inoviranje vzpodbuja vsakega posameznika v podjetju, da razmišlja o napredku in rešitvah. Tako se ustvarja kultura naravnanosti k inoviranju, pa tudi privzemanju tveganj.

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*
[*Maja Makovec Brenčič*] V različnih primerih različno; gotovo so velikokrat ovire v razmejevanju intelektualne lastnine, pravnih vidikih in ozadjih, tudi sami procesni organizaciji oz. razvoju ustreznih odprtih projektno delujočih timov. Še bolj kot to pa vidim oviro v pripravljenosti deliti in odstirati dosežke odprto, navzven, sodelujoče. Te kulture v Sloveniji nismo še zgradili. Pogosto se namreč soočimo s tem, da je težko definirati ali privzeti skupne cilje.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?
[*Maja Makovec Brenčič*] Okolje, ki je investicijsko nagnjeno k tveganju in kjer imajo mlada podjetja možnost pridobivanja finančnih sredstev za razvoj svojih idej. Tega okolja še nismo zgradili, zato je tudi poslovna privlačnost za investitorje v primerjavi z drugimi evropskimi državami manjša.

5. Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?
[*Maja Makovec Brenčič*] Da ustvarijo kulturo predanosti inoviranju, motive rasti na osnovi vseh vrst inoviranja (ne le tehnološkega - inovacije in odprte sisteme namreč razumemo v Sloveniji pogosto preozko) in da se vsak posameznik v podjetju zaveda, da le skupaj z vsemi deležniki podjetje lahko ustvarja preboje in rast.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?
[*Maja Makovec Brenčič*] EF se bo trudila z inovativnimi metodami poučevanja ter aktivnega prepletanja teorije in prakse še bolj vzpodbujati študente h kreativnemu in inovativnemu razmišljanju, pa tudi čim večji internacionalizaciji v prenosu in soustvarjanju znanj. Odprti inovacijski sistemi so v svetu že nekaj časa realnost, zato jih je prav pospešiti v razvoj tudi v Sloveniji.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Maja Makovec Brenčič*] **/.**

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

[*Lidija Honzak*] Ljubljanski univerzitetni inkubator (LUI) sprejema zgolj inovativna podjetja z velikim tržnim potencialom. Po vsebini so razvojno-raziskovalna podjetja iz univerz in prenašajo svoje znanje v podjetja. Eno izmed naših zelo uspešnih start-upov sodeluje z biotehnično fakulteto. Drugi pa npr. razvijajo produkte skupaj z ostalimi člani inkubatorja v vseh fazah inoviranja. Nekatera podjetja imajo tu tudi fizične pisarne, drugi pa uporabljajo zgolj naše sejne sobe. Tako predstavljamo nekakšno bazo za povezovanje. Z uveljavljenimi podjetji se povezujejo start-upi predvsem z namenom pridobivanja izkušenj, tržnih povezav. Mi se od tehnološkega parka razlikujemo predvsem po tem, da predstavljamo »bazo« zgolj za start-upe prvih 3 letih, nato pa morajo nadaljevati svojo pot. Tudi arhitekturna ureditev naših prostorov spodbuja povezovanje podjetij. V LUI je več kot 60 podjetij z več kot 260 zaposlitvami. Naša podjetja so veliko bolj inovativna in fleksibilna, zato so pa tudi preživeli skozi krizo.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

[*Lidija Honzak*] Glavna prednost je interdisciplinarnost timov, podjetij, ki so znotraj LUI. Pri outsourceing-u je bolj zapleteno, saj so že potrebne pogodbe, finančni transferji, itd. Posledično gre tudi za zniževanje stroškov, saj ni potrebno zaposlovati novih kadrov.

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*

[*Lidija Honzak*] Grožnje se pojavljajo predvsem pri realizaciji, saj pride velikokrat do problemov pri intelektualni lastnini. Idej je ogromno malo pa je ljudi, ki znajo idejo realizirat. Prav zato tudi podpiramo NDA pogodbe.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

[*Lidija Honzak*] LUI posluje po mojem mnenju odlično-predvsem na nivoju povezovanja. Je super zgled tudi drugim, tujim inkubatorjem. Izpostaviti moram našo prednost, da imamo v Ljubljani vse fakultete, od tehničnih, naravoslovnih do družboslovnih. Drugod tega ni. Veliko tujih inkubatorjev je postavljenih znotraj ene fakultete in posledično pogrešajo interdisciplinarnost. Po mojem mnenju so UI perspektiva, saj z relativno nizkimi vložki dosegamo odlične rezultate. Tu bi si želela, da bi vlada še bolj opazila naše rezultate.

5. **Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?**

[*Lidija Honzak*] Osebno menim, da se miselnosti ljudi ne da spremeniti. Zato prihodnost odprtega inoviranja vidim predvsem v mladih in njihovih inovacijah. Zavedate se, da je potrebno sodelovati, poudarjate timsko delo. Odličen primer že uveljavljenega podjetja, ki išče zunanje partnerje je Trimo. Mlajše že razmere same silijo v odprto inoviranje, saj morajo biti fleksibilni, stroškovno in časovno učinkoviti.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?

[*Lidija Honzak*] Z mlajšo generacijo se bo odprto inoviranje bolj uveljavilo, saj mlajši ljudje lažje tvegajo - po mojem mnenju je že inoviranje (vključno z odprtim inoviranjem) samo povezano s tveganjem.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?

[*Lidija Honzak*] **/.**

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

[*Samo Zorc*] Zgodba odprtega inoviranja je široka. Področje inovacij je v Slovenskem političnem okolju razdeljeno na dve ministrstvi: Ministrstvo za gospodarstvo in Ministrstvo za visoko šolstvo znanost in tehnologijo MVZT ter institucije ARRS, JAPTI, TIA. Država po evropski regulativi ne sme sprejemati ukrepov, ki bi kakorkoli vplivali na konkurenco na trgu. Tako lahko deluje v okviru programov, spodbud. V Evropi in Sloveniji imamo tudi razne finančne spodbude. Globina podpore MVZT-jevih instrumentov je odvisna od politike države. Usmeritve poda evropska komisija, slovensko ministrstvo nato izpelje projekt. Vse več je omejitev, da bi preprečili vmešavanje države na trg, da ne bi povzročili nelojalne konkurence. Poleg obeh ministrstev je tu vključeno tudi ministrstvo za kulturo-pravice intelektualne lastnine avtorjev. Temeljna značilnost je enostaven pretok znanja skozi življenjski cikel produkta in to mora zagotoviti MVZT preko intelektualne lastnine, regulativa v kontekstu spodbujanja nastajanja podjetij, prenos znanja iz raziskovalnih ustanov v gospodarstvu. Po mojem mnenju naša vloga ne bi smela biti veliko drugačna od tega kar sedaj počnemo. Koncept združevanja in razširjanja znanja mora bit jasno boljši od rezultata posameznega dela. V programu definiramo ukrepe, ki bodo sledili cilju odprtega inoviranja in program Drzna Slovenja po mojem mnenju podpira odprto inoviranje.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

[*Samo Zorc*] Sam se lahko omejim predvsem na Informacijsko-komunikacijsko tehnologija (IKT), ker je to moje področje. Tu je horizontalno delovanje v ospredju. Brez IKT-ja se danes ne da oblikovati podpornega okolja. IKT je in raziskovalno razvojno področje in dejavnik, ki omogoča delovanje. Podjetja izdelujejo izdelke in storitve za katere obstaja povpraševanje, da naredijo nekaj kar ljudje potrebujejo in kar zadovoljuje kupce z vidika kvalitete, mejnih parametrov, funkcionalnosti. Posledično imajo podjetja dostop do znanja, saj ustvariš inovativno okolje in privabljaš kupce z uporabnimi izdelkih. Sam ne vidim primarnega plusa v zniževanju stroškov temveč v dostopu do znanja in vključevanju deležnikov, da bi čim prej dosegel cikel razvoja. Pri IKT-ju je first to market izjemnega pomena in odprto inoviranje k temu zelo pripomore. Ekosistemu vsebujejo vse deležnike, vključno z odjemalci. Tu je open source fenomen.

4. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju?

[*Samo Zorc*] Odgovor na to se razlikuje na geografskih lokacijah in glede na velikost podjetja – gre za multinacionalko ali start-up. Intelektualna lastnina je primer, ki se zelo razlikuje glede na geografsko področje: bistvene razlike v ZDA; Azija, Evropa, Južna Amerike, itd. Groženj pri odprtem inoviranju je bilo včasih manj – ni bil interneta, delitev pravic je bila nekoliko enostavnejša včasih, vsi ti problemi so bili enostavnejši včasih. Dandanes delitev dela ne igra več tako pomembne vloge, delavni časi so se spremenili – gre za dodatek k inovativnosti, ki se ga izjemno težko oceni. Gre za druge koncepte, ki so z vidika delitve dela nezanimivi.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

[*Samo Zorc*] Na to vprašanje lahko odgovorimo, ko vemo kaj želimo. Lahko pričnemo iz cilja, naredimo sistemsko analizo in pridemo do rešitve. V praksi pa se izkaže, da smo do vseh najboljših rešitev prišli naključno. Idealnega se po mojem mnenju ne da določiti. Odločiti se moramo do kakšne mere bomo imeli top down approach in do kakšne mere bomo inovatorjem pustili proste roke. Ta dva pristopa je potrebno »zbalansirati«. Na določenih področjih je potrebno omogočiti en pristop, na drugih pa drugega.

5. Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?

[*Samo Zorc*] Potrebno je izstopit iz obstoječih vzorcev razmišljanja in obnašanja. Okolje (globalno) se spreminja in prav tako bi se morala temu prilagoditi tudi slovenska okolja, vključno z ljudmi. Podjetja morajo spremeniti te vzorce in nato v okviru okolja v katerem delujejo zaznajo te možnosti, kaj se lahko zgodi in to izkoristiti v svoj prid. Potrebno je spremeniti miselnost zaposlenih in ekosistema – celotne

verige vrednosti – karavana kot celota uspe ali pade. Slovenci smo zaprti, konservativni in relativno negativni. To nujno potrebuje spremembo.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?
[*Samo Zorc*] Država mora videti širšo zgodbo in podporno okolje. Odprto inoviranje bo tako kot vse ostalo doseglo različne cikle, ko bo preseglo vzroke za obstoj, bo zanimanje zanj upadlo. Gre za sinusni cikel. MVZT mora vzpostaviti okolje in mora biti sposobno ukrepe prilagajati sinusnemu ciklu. Na papirju smo Slovenci pri ustvarjanju politik zelo dobro, imamo pa več problemov pri implementaciji. Pridemo do vprašanja, če ni mogoče najbolje, da se politika ukvarja sama s sabo in pusti gospodarstvu in inovacijam prosto pot.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Samo Zorc*] **/.**

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?
[*Natalija Medica*] Po mojem mnenju Ministrstvo za gospodarstvo (MG) nudi ogromno podpore in finančne pomoči slovenskemu gospodarstvu. Zadnjih par let smo nudili močno podporo podjetjem pri povezovanju z raziskovalnimi institucijami, financirali smo prehod raziskovalcev iz izobraževalnih ustanov v podjetja in posledično krepitev razvojnih oddelkov v podjetjih. Druga zgodba so interdisciplinarne skupine, kjer smo izvedli razpis, ki podpira sodelovanje skupin raziskovalcev iz različnih področij. Letošnji junij bomo skupaj z MVZT izvedli še en razpis na to temo. Preko JAPTI-ja financiramo podjetjem zunanje raziskovalce, ki razvijajo produkte, pomagajo pri urejanju zaščite intelektualne lastnine, letos pa smo vključili še industrijsko oblikovanje in celostno grafično podobo v to shemo. Naša podjetja še vedno potrebujejo finančni »push« s strani države. Veliko denarja je že bilo vloženega tudi v centre odličnosti, kompetenčne in razvojne centre, ki bi po štirih letih morali nadaljevati zgodbo in biti v veliki meri finančno samostojni.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?
[*Natalija Medica*] Po mojem mnenju je zunanji partner lahko velikokrat bližje trgu, ima boljši pregled nad trgom in bolje razume zahteve trga. Zaprte skupine znotraj podjetja pa so velikokrat osredotočene in omejene na eno samo stroko oziroma na določeno tehnologijo. Zato lahko zunanji partner velikokrat predstavi mnogo bolj zanimive alternative za podjetje. Takšni partnerji dobro poznajo trende, modo in smernice za prihodnost.

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*
[*Natalija Medica*] Za odprto inoviranje je potrebno veliko zaupanja, jasni dogovori in delitev dela. Na teh področjih pa smo v Sloveniji po mojem mnenju šibki. Izrednega pomena so pravice intelektualne lastnine in ostalih pravnih določbah. Menim, da so se stvari pred krizo nekoliko izboljševale, imam pa občutek, da se je ta napredek v zadnjih parih letih vzporedno s finančno krizo izničil in posledično se je zaupanje ponovno poslabšalo. Dobrih, pozitivnih in uspešnih zgodb mediji ne predstavijo širši javnosti. Tudi EU ogromno vlaga v spodbujanje podjetništva in odprtega inoviranja.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?
[*Natalija Medica*] Menim, da bodo iz vseh naših poskusov nastale nekatere dobre zgodbe. Nujno je potrebna sprememba miselnosti, Slovenci moramo postati mnogo bolj odprti za sodelovanje s zunanjimi partnerji. Veliko so in še bodo k temu pripomogla tudi potovanja v tujino in spoznavanje tujih kultur.

5. Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?
[*Natalija Medica*] Za spodbuditev odprtega inoviranja bi moral management nujno spremeniti miselnosti. Potrebna je sprememba mentalitete naroda kot celote in postati moramo bolj odprti. Poleg tega pa je nujno potrebno predstaviti uspešne zgodbe, ki naj bodo motivacija in zgled ostalim slovenskim podjetjem.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?
[*Natalija Medica*] Ogromno se še da storiti na tem področju. Menim, da v prihodnosti finančnih vlaganj ne bo več toliko kot jih je bilo v preteklosti, je pa potrebno seznaniti podjetja z uspešnimi zgodbami odprtega inoviranja. Nekoga, ki je na trgu, ki ima vizijo, svež pristop je potrebno vključiti v razvojni proces (primer prakse Gorenja in Trima). Za spodbuditev odprtega inoviranja je potrebno povečati tudi interdisciplinarnost potencialnih kadrov že tekom študija.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Natalija Medica*] /.

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

[*Marjana Majerič*] V lanskem letu je tehnološki park Ljubljana (TPLJ) organiziral 5 delavnic (več kot 2000 ljudi). Menim, da smo (TPLJ) močno vpeti v podporno okolje, tudi s pomočjo sodelovanja z javnimi institucijami in fakultetami. Družbeniki TPLJ so: Institut Jožefa Stefana (IJS), Iskra Sistemi d.d., Iskratel d.o.o., Nacionalni inštitut za biologijo, Kemijski inštitut, Lek d.d. in Mestna občina Ljubljana. Poleg družbenikov delovanje TPLJ podpirata tudi Ministrstvo za gospodarstvo in IASP. Tesno sodelujemo predvsem s tehničnimi in ekonomsko fakulteto in poskušamo privabiti največje talente. V ta namen imamo tudi prezentacijo na IJS vsake pol leta, s katero poskušamo ozavestiti čim več potencialnih podjetnikov. Od posameznikov pridobimo ogromno idej, ki pa jih pozneje poskušamo racionalizirati in tem posameznikom poskušamo tudi pomagati pri iskanju zunanjih partnerjev. Preko Akademije poslovne odločnosti TPLJ kandidati lahko izdelajo poslovni načrt in imajo nato predstavitev pred potencialnimi poslovnimi angeli. Poleg vsega tega, TPLJ sodeluje trudi s Švedsko na »trade« projektu v Braziliji. Kot predsedujoči svetovnemu združenju tehnoloških parkov poskušamo pokrivati cel svet in omogočiti našim podjetjem vstop na tuje trge. TPLJ ima tudi »Innovational Audit« kjer preko posebnega diagrama ocenimo šibke in močne točke podjetij, jih pozicinoriamo na trgu ter poskušamo predvideti kakšne možnosti, potenciale imajo ta podjetja. Menim, da imamo v Ljubljani vse javno-raziskovalne organizacije, izobraževalne ustanove – celotno podporno okolje je na voljo. Tako je tudi naloga in obveznost TPLJ, da poskuša pridobiti vse talente in jim pomagati po svojih močeh (pri investicijah v razvoj, iznajdbah, inovacijah, itd.)

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

[*Marjana Majerič*] Moje mnenje je in vedno bo, da več glav več ve. Tendence sveta in novi temelji tega tisočletja se postavljajo na novo. Manjša podjetja se povezujejo in diverzifikacija delovanja je še večja. Poleg tega je z odprtim inoviranjem potencial še večji, saj lahko podjetja sodelujejo skupaj na določenem projektu, vzporedno pa razvijajo sama ali v sodelovanju s kom drugim nove produkte, storitve. Tretjič, povezovanje z zunanjimi partnerji povečuje možnosti za obstoj na trgu. Četrtič, več kredibilnih partnerjev povečuje prepoznavnost, kredibilnost in ugled produkta in petič, odprto inoviranje olajša dostop do kapital, saj z rastjo podjetje pridobi večjo likvidnost.

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*

[*Marjana Majerič*] Menim, da dokler ima posameznik zgolj idejo, inovacijo in še ni patentirana, mu jo lahko konkurenti ukradejo. Zato je izbira zunanjega partnerja izjemno pomembna. Verjamem, da v kolikor smo pozitivni in vidimo v ljudeh, odnosih dobro, bodo tudi rezultati sodelovanja pozitivni. Pri povezovanju z zunanjimi partnerji je pomembno preučiti prednosti in slabosti takšnega odnosa ter nato sprejeti odločitev o medsebojnem sodelovanju. Že v začetku je potrebno določiti pogoje poslovanja, dobre temelje, saj največkrat obvelja načelo: »kakor postelješ tako spiš«. Izjemnega pomena je tudi pravna zaščita. Sama v odprtem inoviranju definitivno vidim več prednosti kot slabosti.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

[*Marjana Majerič*] V tem trenutku imamo ogromno čudovitih organizacij, tudi državnih, ki podpirajo odprto inoviranje. Največji problem nastane zaradi pomanjkanja dialoga med institucijami, saj le-te niso dovolj povezane. Vidim pomanjkanje nekakšnega krovnega pregleda - cilj vlad je največkrat doseči kratkoročni učinek, ne skrbijo dovolj za strategije takšnih programov, da se le-ti ne podvajajo, temveč da bi se dopolnjevali. V Sloveniji je približno od 60.000 do 100.000 potencialnih podjetnikov, inovatorjev. Vse državne institucije pa se grebemo za te ljudi, namesto, da bi delovali sinhrono – razlog vidim predvsem v organizaciji programov, spodbud. Programi in izvajalci so učinkoviti, občutim pa pomanjkanje komunikacije, povezave. Zelo nujno potreben je tudi premik, update v sodnem sistemu. Slovenci smo v

večini zelo zaprt narod in posledično je takšno tudi slovensko poslovno okolje kar pa povzroča probleme pri implementaciji strategij in strah pred prevzemanjem odgovornosti.

5. **Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?**
[*Marjana Majerič*] V TPLJ imajo podjetja veliko možnosti za povezovanje – že sam koncept in organizacija zgradb je temu podrejena. Na žalost pa podjetja prevečkrat zaprejo vrata, so introvertirana, npr: ko organiziramo socialne dogodke, promocije se naši člani le teh ne udeležujejo. Nekako ne spregledajo in vidijo možnosti ter potrebe za »social network«. Ostajajo pasivni in ne izkoristijo danih priložnosti. Socialna mreža je po mojem mnenju izredno močno orožje, ki se ga slovenska podjetja še ne zavedajo. Na tem mestu vidim močno potrebo po spremenitvi slovenske kulture, kar pa predstavlja dolgotrajen proces.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?
[*Marjana Majerič*] Pravice intelektualne lastnine so po mojem mnenju trenutno na izredno visoki ravni, pri povezovanju pa se mora podjetje odpreti in deljenje znanja je ključnega pomena pri odprtem inoviranju. Potrebno je omogočiti čim več podjetjem, da bodo z našo pomočjo še bolj rasla. Da bi dosegli vse navedeno pa je potrebno sprejeti strah pred nujno potrebnimi spremembami.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Marjana Majerič*] /.

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

[Rebeka Koncilja] Center odličnosti za biosenzoriko, instrumentacijo in procesno kontrolo (COBIK) se razlikuje od ostalih institucij, saj je bil leta 2010 ustanovljen s strani štirih slovenskih visokotehnoloških podjetij z uveljavljeno globalno odličnostjo (Instrumentation Technologies, BIA Separations, Cosylab in Systec) in štirih mednarodno priznanih slovenskih institucij znanja (Nacionalni inštitut za biologijo, Institut Jožef Štefan, Fakulteta za elektrotehniko-Univerza v Ljubljani in Ekonomska fakulteta-Univerza v Ljubljani). Vloga COBIKa pri spodbujanju un promociji odprtega inoviranja je predvsem, da z globalno odličnostjo na temeljih odprtega sodelovanja in s približevanjem tehnologij na področjih biosenzorike, instrumentacije in procesne kontrole še naprej vztrajno ustvarja prebojne globalne tehnološke rešitve in pogoje za udejanjanje visokotehnološkega podjetništva. COBIK sestavlja 6 laboratorijev in sicer: Bio-Instrumentacijski laboratorij, Laboratorij za bioanalitiko, Laboratorij za krmilne sisteme, Laboratorij za napredno instrumentacijo, Laboratorij za odprte inovacijske sisteme in Laboratorij za sisteme z naprednimi materiali. Ti laboratoriji združujejo interdisciplinarna znanja z namenom ustvarjanja prebojnih rešitev in pogojev za visokotehnološko podjetništvo.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

[Rebeka Koncilja] Menim, da so glavni motivi odprtega inoviranja predvsem v dostopu do dodatnega znanja, ki ga podjetje nima, posledično se znižujejo stroški, saj ni potrebno najeti dodatne delovne sile in v kolikor so sodelovanje in odnosi med podjetji dobri, se tudi razvojni čas lahko skrajša. Sodelovanje zunanjih parterjev velikokrat omogoča tudi prijavo na razne nacionalne in mednarodne razpise.

3. Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju*?*

[Rebeka Koncilja] Po mojih izkušnjah je glavna grožnja odprtega inoviranja predvsem v odkritosti in dobronamernosti vseh partnerjev. Nekateri partnerji se na žalost povezujejo zgolj z namenom pridobivanja dodatnih sredstev, ugleda in informacij. V kolikor želijo podjetja doseči pozitivne rezultate odprtega inoviranja potrebujejo iskreno sodelovanje z jasno določenimi nalogami in cilji.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

[Rebeka Koncilja] Menim, da imamo v Sloveniji veliko odličnih institucij, ki spodbujajo odprto inoviranje in da je država do sedaj naredila ogromno za podporo podjetij. Na žalost pa nekatera podjetja to izkoriščajo za dobičke in doseganje kratkoročnih ciljev. V kolikor želimo biti uspešni tudi v prihodnosti mora večina podjetij spremeniti odnos do poslovanja, postati morajo bolj odprta, se povezovati s komplementarnimi partnerji (domačimi in tujimi) ter razvijati inovativne izdelke in storitve.

5. Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?

[Rebeka Koncilja] Podjetja bi morala predvsem razumeti vloge posameznih institucij. Kot sem že omenila, imamo v Sloveniji veliko odlični podpornih organizacij, naša podjetja pa ne znajo oziroma ne želijo izkoristiti vseh možnosti, ki so jim na voljo. Podjetja se morajo prenehati pritoževati temveč morajo postati učinkovita in iznajdljiva.

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?

[Rebeka Koncilja] Vloga centrov odličnosti je spodbujanje povezovanja horizontalnega znanja na vseh visoko tehnoloških področjih. Sodelovanje temelji na strateškem partnerstvu med gospodarstvom in akademiki. Po mnenju ministrstva za visoko šolstvo in znanost naj bi centri odličnosti predstavljali interdisciplinaren raziskovalno-razvojni program, s ciljem učinkovitega prehoda v gospodarstvo. V COBIKu uresničujemo poslanstvo na temeljih preverjene globalne odličnosti ustanovnih partnerjev, odprtega interdisciplinarnega sodelovanja in s približevanjem visokih tehnologij na področjih

biosenzorike, instrumentacije in procesne kontrole. Po letu 2013 se podpora ministrstva centrom odličnosti preneha in zavodi bodo morali najti svojo pot za preživetje. Sama menim, da bi bila neizmerna škoda opustiti vso infrastrukturo in znanje, ki so ga centri v teh 4 letih pridobili. Se pa strinjam z dejstvom, da bi po 4 letih delovanja zavodi morali postati dovolj samostojni, da bi se vsaj delno sami financirali. COBIK prav s tem namenom vlaga v raziskovalce in druge potencialne posameznike, da bi zrasli z idejo odprtega inoviranja in povezovanja.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[Rebeka Koncilja] /.

1. Kakšna je po vašem mnenju vloga vaše institucije pri spodbujanju in promociji odprtega inoviranja podjetij?

[*Matjaž Polak*] V Sloveniji smo po mojem mnenju še vedno preveč zaprti. Včasih imam občutek, kot da je Slovencem nekdo zapisal v gene strah pred povezovanjem z zunanjimi partnerji. Kot drug dejavnik bi izpostavil slovensko gospodarstvo-večina slovenskih podjetji še vedno deluje na enak princip kot je delovala 20 let nazaj. Situacija na trgu pa se je močno spremenila in po mojem mnenju bi se morala podjetja nujno prilagoditi in postati bolj fleksibilna. Kot tretji faktor bi izpostavil nepoznavanje alternativnih možnosti za vzpostavitev podjetja, kot je na primer joint venture. Posamezniki bi lahko kot fizične osebe stopili skupaj v joint venture. Zaradi vseh teh dejavnikov je odprto inoviranje v Sloveniji omejeno. Naša institucija se razlikuje od ostalih centrov odličnosti predvsem po tem, da imamo dve večji slovenski podjetji, ki sta si zelo močna konkurenta na trgu. Tako da nekega odprtega inoviranja med njima ni moč zaslediti. Ostali partnerji (univerza, Institut Jožeta Stefana, Kemijski institut in ostala dve podjetji) pa med seboj sodelujejo in skupaj inovirajo. Mi imamo že od leta 2009 trdno določene cilje, ki jim tudi sledimo. Trenutno pa se pogovarjamo tudi z novimi potencialnimi partnerji, ki bi doprinesli neki novi know-how v naše podjetje. Stvari se izboljšujejo vendar so prej omenjeni dejavniki, ki zavirajo odprto inoviranje še vedno močno prisotni v našem prostoru.

2. Kaj menite, kateri so glavni motivi, prednosti odprtega inoviranja za podjetje?

[*Matjaž Polak*] Vsekakor so ena glavnih prednosti po mojem mnenju nižji stroški, razvojni čas pa je lahko krajši ali pa tudi daljši (odvisno od učinkovitosti sodelovanja). Izjemna prednost je tudi know-how in network. Zavedati se moramo, da nikoli ne more imeti podjetje vseh najboljših specialistov zaposlenih. Vedno je še nekdo izven podjetja, ki se na določeno področje še bolj spozna.

5. **Katere so po vašem mnenju glavne slabosti, grožnje pri odprtem inoviranju***?*

[[*Matjaž Polak*] Kot glavno grožnjo bi omenil predvsem krajo intelektualne lastnine, probleme ki se lahko pojavijo ob delitvi dela, prihodkov, včasih pa zaščita intelektualne lastnine privede tudi do višjih stroškov pogodb. Po mojih izkušnjah je v veliko slovenskih podjetjih prisoten tudi NIH sindrom, ljudje so še vedno najbolj prepričani v svoje rešitve, inovacije in težje zaupajo zunanjim.

4. Če pogledamo v prihodnost, kaj menite kakšno bi bilo idealno okolje (vključno z notranjimi in zunanjimi elementi) za odprto inoviranje?

[*Matjaž Polak*] Ena izmed ključnih stvari bi bila spremembe izobraževalnega programa – vse fakultete bi morale ponujati tudi temeljne ekonomske predmete, kot so na primer podjetništvo, temelji računovodstva, gospodarsko pravo in osnove financ. Poleg tega bi vsi potrebovali osnovno znanje o trženju in kako pridobiti potrebna sredstva. V idealnem okolju bi ljudje razumeli prednosti, ki jih ponuja odprto inoviranje in bi znali vse to izkoristiti in obrniti v svoj prid. Da pa bi zaposleni spremenili svojo miselnost, je na prvem mestu nujno potrebna podpora vodstva odprtemu inoviranju. Nujno potrebna je tudi močna pravna zaščita intelektualne lastnine.

5. **Kaj lahko podjetja po vašem mnenju naredijo sama za povečanje odprtega inoviranja?**

[*Matjaž Polak*] Kot že omenjeno prej, je nujno potrebna sprememba miselnosti, podpora managementa in za odprto inoviranje je najprej potrebno imeti notranje inoviranje. Menim, da je vprašanje na mestu koliko je inoviranje resnično prisotno v slovenskih podjetjih-ali ima večina podjetji podporni sistem (vključno s finančnimi sredstvi).

6. Za zaključek, kaj menite kako bo z odprtim inoviranjem v prihodnosti in kako bi lahko vaša organizacija še bolj spodbudila in podprla odprto inoviranje?

[*Matjaž Polak*] Menim, da bo odprto inoviranje vedno bolj prisotno v slovenskem podjetniškem okolju. Institucije, ki so bile v zadnjem času ustanovljene so namenjene podpori le tega in v kolikor bo vsaj malo

interesa tudi v prihodnosti se bodo uspešne zgodbe nadaljevale. V kakšnem obsegu pa nam bo prihodnost pokazala.

7. Ali je še kaj takšnega, kar bi še sami želeli dodati na to temo?
[*Matjaž Polak*] /.