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Faculty of Business Economics

Master of Management

Masterthesis

Identifying the intra-organizational and individual level challenges during the implementation of open innovation paradigm in companies located in Bulgaria

Ivan Atanasov

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization International Marketing Strategy

SUPERVISOR :

Prof. dr. Wim VANHAVERBEKE



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Preface

This master's thesis is the final step of my studies of Master of Management with the specialization in International Marketing Strategy at Hasselt University. Firstly, I would like to give special thanks to my promotors Prof. Nadine Roijackers and Prof. Dr. Wim Vanhaverbeke for the guidelines which they provided to me during the whole process of writing this book.

Furthermore, I would like to thank, most sincerely, my girlfriend, Desislava Vasileva for supporting and encouraging me through the entire journey in Belgium. Moreover, I would like to express my gratitude to her family concerning the fact that they believed in me.

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Ivan Atanasov

September, 2017

Summary

The focus of this research is to perform a better overview of challenges which innovation employees experience during Open Innovation implementation within companies located in Eastern Europe, in particular in Bulgaria. Open innovation challenges have been barely investigated in Eastern Europe, especially the barriers on the individual level, due to this reason the aim is to enhance the literature in this particular field. Recently, R&D investments in Eastern European countries dramatically increase, due to this motive deeper analysis of OI practices in this region is needed. The purpose of the master thesis is to provide open innovation entrepreneurs with a detailed, in-depth view about business managerial challenges by using the sample of Bulgarian companies.

The second main objective of this master dissertation is to shed some light concerning the relationship between open innovation practices and open business model. The significant research gap has been identified in existing literature. Companies still treat both activities separately, namely applying open innovation practices within main company activities, as well as adjusting the company business model concerning the new implied open innovation activities.

Overall, three case studies were performed. The findings have been obtained through in-depth semi-conducted interviews. Moreover, by employing data collected from the interviews case study transcripts have been created. Next, by using the transcripts, individual case study reports have been established, incorporating an overview of each company, general synopsis of open innovation practices within the company, main intra-organizational challenges, individual level challenges, as well as the relationship between open business model and open innovation practices. Afterward, cross-case analysis has been performed, in terms of discovering resemblance and distinctions among cases.

The findings from with-in case study analysis and cross-case study analysis identified the major intra organizational and individual level challenges, which company faced during implementation of open innovation practices. The five intra-organizational challenges were determined, namely, unfavourable company mindset, communication challenges, not-invented-here syndrome, lack of organizational structure and managerial challenge.

Additionally, individual level challenges have acknowledged, in particular, cognitive challenge, coordination challenge and lack of competence. Furthermore, the relationship between open business model and open innovation practices have investigated. The outcome of within case analysis acknowledges that the open business model is an essential precondition for successful application of open innovation practices. Moreover, according to all interviewees, the open business model has to be adjusted in term of different types of open innovation activities.

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Chapter 1. Introduction

Although there is an awareness of the role of individuals in open innovation, most of the literature focuses on the organizational rather than the individual- or project-level (Mortara et al., 2011). As a result, we know relatively little about the challenges that R&D professionals face in the daily pursuit of open innovation, the ways individuals cope with these challenges and the practices that organizations can introduce to help them become more efficient open innovators. (Salter et al., 2014). Therefore, the aim of this research paper is to shed some light on challenges which companies and individuals, in particular, are facing during the implementation of Open Innovation practices. Accordingly, the general research question of this master thesis will explore what the major challenges companies are facing on the intra-organizational and individual level during the implementation of Open Innovation paradigm.

At the same time, we know that individuals working in R&D need to adapt when employers adopt more open models of innovation, but we do not know *how* individual work needs to change in order for the benefits promised by open innovation to be achieved (Alexy, Henkel, and Wallin, 2013; Salter et al., 2014). Once the primary intra-organizational level challenges are identified, this master thesis will examine the leading individual level challenges.

Chesbrough (2017) describes that most organizations still treat R&D entirely separately from the design of business models. He states that this is a mistake, linking technological innovation and business model innovation can amplify the value of each. The business model utilizes both external and internal ideas to create value while defining the internal mechanism to claim some portion of that value (Chesbrough, 2003; Vanhaverbeke et al., 2014). In response to the performed literature review, a significant gap was identified concerning the lack of connection between open business model and open innovation practices. Therefore, the aim of this research paper is to define the relationship and interaction between open business model and open innovation activities.

This master dissertation contains three case studies which aim to respond to the general research question and related sub-questions. The case studies have been precisely selected, in order to respond to the aim of this master thesis. Overall, each case study represents the

different type of open innovation practices applied within companies, namely, inside-out, outside-in and combined. This differentiation has been made in order to obtain the full scope of results regarding the main challenges which R&D professionals are facing, according to a different type of open innovation practices. In the same vein, the relationship between open innovation practices and open business model will be studied in regards to the different types of open innovation.

The structure of this master thesis is as follows. The first chapter contains the main objectives of this master thesis, as well as the major motivations and values of it. The second chapter represents the review of the existing literature concerning the description of open innovation theory, types of individual level challenges faced by R&D professionals, and open business model definition. The third chapter describes the research methodology, namely the research design particularly multiple case study approach, as well as data analysis method specifically, cross case analysis. The fourth chapter defines case studies reports, within-case analysis, as well as the cross-case analysis. Last but not least, the fifth and final chapter provides the contribution and findings of this master thesis, formulates the general conclusion, and calls the limitations.

Chapter 2. Theoretical background

This chapter aims to provide the review of the available literature concerning the research topic of this master thesis. The structure of this literature review is following. Firstly, the detailed definition of open innovation is introduced. Afterward, different types of open innovation practices have been presented. Next, the individual level of open innovation, as well as the responding individual level challenges. Last but not least, the comprehensive definition of the open business model concept. The general research question and related sub-questions have been developed on literature review basis.

2.1) Open Innovation Overview

Open innovation paradigm is a relatively new concept presented in 2003 from Harvard University professor Henry Chesbrough. Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths (Chesbrough, 2003; West et al., 2014). According to West and Gallagher (2006) systematically encouraging and exploring a broad range of internal and external sources for innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels. Open innovation illustrates the transformation of inside company power which is mixed with the exclusivity of external knowledge, technologies, financial capacities and employees skills from possible external business partners for the reason of creation of new flexible customer service and product portfolio. Open Innovation implies an extensive use of inter-organizational relationships to in-source external ideas from a variety of innovation sources and to market internal ideas that fall outside the firm's current business model, using a range of external market channels. (Chiaroni et al.,2011). Chesbrough and Bogers (2014) define open innovation as a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model.

Most research on open innovation differentiates two concepts of open innovation: *inbound* where new ideas flow into an organization and *outbound* where internally developed technologies and ideas can be acquired by external organizations with business models that are better suited to commercialize a given technology or idea (Chesbrough 2003; Brunswicker and Vanhaverbeke, 2015). To date, research on OI processes has focused on distinguishing between the '*outside-in*' and the '*inside-out*' processes of OI, and their coexistence (Enkel et al., 2009; Letizia, Mortara 2011). Grassman and Enkel (2004) determined the third type of open innovation called '*coupled*' process. „The coupled process is coupling the outside-in and inside-out processes by working in alliances with complementary partners in which give and take is crucial for success. Companies that decide on the coupled process as a key process, combine the outside-in process (to gain external knowledge) with the inside-out process (to bring ideas to market)."

Chesbrough (2012) describes that the *outside-in* part of open innovation involves opening up a company's innovation processes to many kinds of external inputs and contributions. Deciding on the *outside-in* process as a company's core open innovation approach means that this company chooses to invest in cooperation with suppliers and customers and to integrate the external knowledge gained (Grassman and Enkel, 2004). This is more frequently used kind of open innovation among companies. Enterprises can externally acquire intellectual property, including the licensing of patents, copyrights or trade marks, to benefit from external innovation opportunities (Chesbrough, 2006; Vareska, van de Vrande, 2009)

Inside-out open innovation requires organizations to allow unused and underutilized ideas to go outside the organization for others to use in their businesses and business models (Chesbrough, 2012). The *inside-out* process refers to earning profits by bringing ideas to market, selling IP, and multiplying technology by transferring ideas to the outside environment. (Enkel et al., 2009). Out-licensing allows enterprises to profit from their IP when other firms with different business models find profitable, external paths to the market (van de Vrande, 2009).

Implementing above mentioned dimensions of open innovation practices requires significant transformation within company structure and innovation activities. Open Innovation entails a significant organisational change in the firm that is willing to adhere to its principles, we advance that the implementation of Open Innovation should be better conceived as, and takes place in practice in the form of, a multi-phase organisational change process (Chiaroni et al.,2011). Successfully managing externally acquired knowledge requires the development of complementary internal networks (Hansen and Nohria, 2004), i.e. organisational structures devoted to accessing and integrating the acquired knowledge into the firm's innovation process (Chiaroni et al.,2011). Moreover, implementing open Innovation requires, therefore, the use of knowledge management systems able to support the diffusion, sharing and transfer of knowledge within the firm and with the external environment (Chiaroni et al.,2010).

Little attention has been paid to the "micro-foundations" of open innovation, the choices and behaviors of individuals involved in the successful exploitation of external ideas, and how these individual actions shape aggregate strategic and managerial outcomes (Volberda et al., 2010). An open innovation culture will come about only if individuals adopt an open innovation mindset and change their behavior accordingly (Nakagaki et al., 2012). In the open innovation management literature, it is widely acknowledged that individuals play a crucial role in collaborative knowledge creation processes (Chatenier et al., 2010).

It is the individual researchers within the firm, not the organization, that identify and develop new innovative ideas in collaboration with sources outside the firm's boundaries (Salter et al., 2015). These individuals are operating on the front lines of open innovation, preparing ideas to cross the boundary of the organization, either bringing knowledge into the firm (inbound open innovation) or transferring knowledge outside (outbound open innovation) (Salter et al., 2014; Grassman and Enkel,2010). The role of the innovation manager is related to the building of the most appropriate team composition, as well as to the creation of a suitable working environment, stimulate the innovation employees to engage with third parties, likewise to obtain external knowledge. The various types of background knowledge of open innovation professionals could have a positive influence on the overall implementation of the open innovation practices. In the same way, OI practitioners have to possess competencies which could allow them to overcome OI challenges on the individual and organizational level.

2.2) Exploring the Challenges of Open Innovation

In this section, several intra-organizational level challenges have been identified. The aim of this section is to acknowledge the primary challenges on the individual level in the existing literature. The research will zoom in the individual level challenges which R&D professionals are facing regarding engagement with external partners. Intra-organizational challenges are barriers which R&D individuals are dealing on a daily basis within their organization.

Managerial challenges - when firms open up their R&D and innovation processes they need to recognize the managerial challenges this entails. (Susanne Ollila and Maria Elmquist,2011). The internal management challenges are equally important, as managers struggle to align open innovation with strategic objectives (West et al., 2014). Managerial challenges could emerge regarding the lack of performance metrics within the organizational structure because there are no clear metrics indicators related to OI activities. Likewise contrasting managerial skills are essential to lead open innovation activities. The scale of open innovation management includes the tremendous complexity of operations. Furthermore, choosing the most suitable innovation partner, also the transfer of transactions between innovation partners could be challenging for the IO managers. Besides, another managerial challenge is regarding adjusting a new company business model and strategy.

NIH (not invented here) syndrome - "a negative attitude to the knowledge that originates from a source outside the own institution" (Lichtenthaler and Ernst 2006, p. 368). NIH syndrome is associated with rejecting potentially valuable external ideas and knowledge from company employees. According to Antons and Piller (2015), it involves an irrational devaluation or even rejection of this external knowledge by an individual, even though this knowledge might be valuable from the perspective of the organization. On the individual level employees, personal thinking might acknowledge internal company 's knowledge as a major than external one. In the similar vein, personal decision-making process could cost adverse consequences to business performance as well as to its innovation outcomes. NIH syndrome is ingrained within individual behavior, due to this reason it is a likely prerequisite for the challenge on the individual level.

Cognitive challenge - more often companies encourage their employees to investigate outside the enterprise boundaries for innovative ideas and practices, which could be applied successfully within company main business model and business activities as well. In this way, by exploring external knowledge sources, individuals can capture new valuable ideas. These useful new insights could stimulate the creativity of the company's employees in a positive way as well as an ability of individuals to gain a new, different knowledge which could be beneficial and valuable for the organization. To innovate effectively, individuals need to figure out how to allocate their attention to a variety of external information sources while still focusing on the internal needs of the organization so that ideas sourced externally will have relevance for the firm (Dahlander et al., 2014). Attention-based theories typically focus on how leaders influence or direct the attention of organization members (Li *et al.*, 2013). Management activities such as the allocation of employees' attention on external search sources could be complicated when the sum of various type of external knowledge and idea sources have a vast amount. As a consequence, coordination costs regarding external search sources could appear. In this sense, this coordination costs will additionally complicate the process of obtaining external knowledge. These coordination costs include integration costs resulting from the cognitive challenge of bringing together knowledge from diverse settings and approval costs related to getting internal agreement to engagement with different external partners taking account of intellectual property (IP) considerations (Salter et al., 2014).

Cultural challenge – during the implementation stage of open innovation concept companies might face a cultural challenge regarding employees' mindset. Applying the OI concept required changing the organizational culture as well as individual one. An open innovation culture will come about only if individuals adopt an open innovation mindset and change their behavior accordingly (Nakagaki et al., 2012). The main challenges in building and developing innovation culture are the change of the organization's mindset, in mobilizing organizations as teams to bring new products and services to market quickly, and in bringing an organization together to translate product and service initiatives into sustained results (Angel, 2006; Carayannis and Meissner, 2016). It could be challenging because the reshaping of individual and organizational mindset is a harsh and complicated process. Moreover, the lack of open innovation mindset could be an obstacle for overall implementation of Open Innovation

practices and ongoing innovation strategy. The inappropriate employees' mindset might hamper internal and external collaborations; respectively this could harm all potential innovation activities. Cultural hurdle mainly is related to employees' attitude and behavior, which could affect negatively new product/service development and potential high valued innovation activities.

Lack of competence – lack of skills could appear into different organizational layers. However, the absence of competencies on the individual level, in particular on the employee level and the managerial level could be considered as a major individual intra-organizational challenge. Distinctive personal skills are needful during the operational stage of close innovation activities than necessary skills for running within open innovation environment. The necessary skills in close innovation model are more focused on individual expertise in the particular research area. In contrast, open innovation activities required researchers to poses collaboration skills and distinct attitude to adjust external ideas and experience.

2.3) Open Business Model

Open innovation combines internal and external ideas into architecture and systems whose requirements are defined by a business model. Open innovation processes utilize business models to determine the requirements for these architectures and systems. These business models access both external and internal ideas to create value while defining internal mechanisms to claim some portion of that value. (Chesbrough, 2012). Open Innovation does not merely require a firm to intensify its relationships with external organizations throughout its innovation processes (Chiaroni et al.,2010). Rather, it involves the use of the business model as the cognitive device through which decisions about innovation are evaluated and taken (Chesbrough, 2006; Chiaroni et al.,2010). The innovation in business model itself will allow the company to improve its innovation activities. Also, to generate greater value through using external idea sources, as well as to increase its revenues streams from innovation through selling out IP, licensing and joint ventures. The organization's business model could give a better overview which R&D projects could be launched by existing business model, as

well as to determine which projects could be used outside organizational boundaries; the alternative option could be the company to launch an entirely new business model concerning innovation product or service.

In order to trigger open innovation activities, companies should develop an open business model or adjust the existing one. The open business models will enable the organization to enhance its innovation process by capturing additional value. They also allow greater value capture by utilizing a firm's key asset, resource or position not only in that organization's operations but also in other companies' businesses (Chesbrough, 2007). The open innovation concept can not be successfully implemented without complementary company business model. The company business model determines the ways which company delivers its value proposition, as well as capture the external values.

On the one hand, the open business model correspondence to company's transactions with external idea sources, such as customers, experts, competitors, suppliers, and universities. Enterprises that implement open innovation activities use the open business model to create additional value from external sources. Moreover, it could increase the flexibility of the enterprise to create value. The open business model will grant access to different kinds of external knowledge sources. Furthermore, by collaborating with external parties, companies will speed up the development process, reduce the development time and costs respectively. It could allow the organization to improve their innovation process as well as to decrease overall R&D costs. Through implementing external innovative ideas, companies will be able to build stronger value proposition, which will bring a unique competitive advantage over the rivalry.

On the other hand, the open business model will increase generation of new revenue streams. The inside-out open innovation activities in combination with the open business model will capture additional value for the company. The company will capture extra value through its open business model by selling unused IP licenses, which are not suitable to be applied within company core business model, as well as creating a spin-off activities and joint ventures.

Business model Canvas tool has been presented by Alexander Osterwalder on 2010 within his book *Business Model Generation*. The definition concerning business model is „a business model describes the rationale of how an organization creates, delivers, and captures value.“ This framework represents a real contribution to organizations trying to get more value out of open innovation because they provide practical approaches to mapping exciting new business models for internal projects that don't fit with the organization's main business model—and thus point the way to harvesting value from inside-out knowledge flows (Chesbrough,2017).

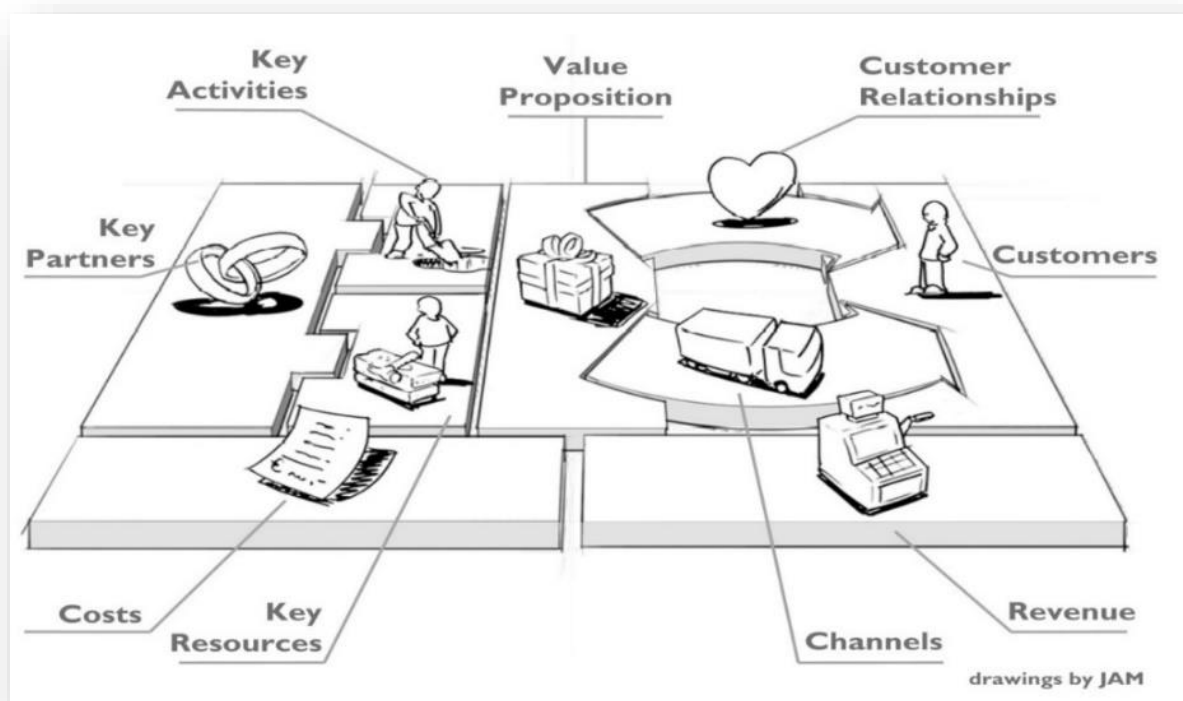


Figure 2.1 Business model Canvas. Adapted from Business Model Generation, 2010

The canvas is a one-size-fits-all model, and it provides information about the core logic of a particular company (how organizations create, capture and deliver value) and finds a possible way of making innovations sustainable and repeatable. The business model includes nine different building blocks which are divided into two separate parts – front stage (right-hand site) and backstage (left-hand site). The visible part of the model represents the interaction

between the particular firm and its customers, clients, and users which are based on the following structural elements:

- *Value propositions* are the central feature of each canvas which is primarily based on innovations, the representation of the bundle of products/services that create value for a particular target market.
- *Customers relationships* are focused on co-creation of value and describe the type of communication between the company and its customers (intimate, transactional or between both). They help in improving customer loyalty and finding and introducing new customers.
- *Distribution channels* represent the way that company communicate and reach its customers. Dispersion must be adjusted to create good customer awareness about the proposed value.
- *Revenue streams* or income sources are two basic types - sale of resources (one-time customer payments) and licensing out (recurring on-going payments). They show chosen pricing mechanism, and in the commercial aspect, to increase company profit.

Behind presented elements, it is located the central power of a company – building blocks which make specific business possible. They are classified in four basic boxes:

- *Key resources* are the most valuable firm assets which include: physical resources, intellectual property, human and financial resources. They are essential for achieving sustainable competitiveness.
- *Key activities* include production, problem-solving actions and managing supply chain platform/network.
- *Key partners* describe the network of suppliers and partners that make a business model work through sharing risk, resources, skills, and knowledge for the development of innovation. The external supportive network should complement substantial internal resources.
- *Cost structure* or mission cost describes all expenses for creating and delivering value, maintaining customer relationships and generating revenue. It can be divided into fixed costs, variable costs, economies of scale and economies of scope.

The same definition is suggested by Amit and Zott (2001) who highlights that business model is an important concept for innovation and that by creating new sorts of business models, the value can be created. Moreover, the professional tool and firm strategy are complementary and depend on each other. Their shared key aspect is building innovation. Firms could rival in cost, differentiation or a niche basis. Making a fruitful and creative business model depends on various factors. According to Teece (2010), it is based on well-understood intelligence and information about the market, suppliers, and customers. In combination with creativity and entrepreneurial spirit, it can lead to new and innovative business models which meet customer needs.

The application of a canvas depends on additional strategic analyses – Value proposition design and Environmental analyses. These further evaluations will give secure information about the business environment and what is its influence on the company business model. The business model can be a pathway of innovating innovations. If the concept is sufficiently differentiated and hard to replicate from incumbents or new entrants, it will provide firm with a leading position in the global market. Moreover, the canvas can easily draw a business map which will describe the strength and weaknesses of a particular company. This strategic tool also has a unique mediation role between firm value chain and existing and potential customers. In summary, business models concern the mechanism of the business, what kind of value is capturing and delivering and how this value is providing to the customer.

However, there are some limitations related to BMC. The main problems of this tool are based on several factors. Firstly, the restriction notion of competition, namely related to product's or service's features. This element is required by some critics because the rivalry is the primary driver of making innovations possible. Next missing part could be identified with no problem definition. It makes mapping specific business story much more complicated because at the beginning canvas has to search and to formulate set goals and afterward to find the way of solving them. Besides to this, there are not any links between social and environmental impact and with the strategy of a company. Nowadays, customer feedback and enormous changes in the economic background are crucial parts in every analysis. Another drawback is the lack of strategic planning related to the permanent modification of government requirements or norms.

All in all, theoretical research is associated with the current paradigm of business model, because it interprets a holistic understanding of firm's core ideas, gives a strategic open-mind thinking about potential future growth and improvement, identifies gaps and keeps leading competitive advantage moveable by building stable collaborations among partners.

2.4 Literature gap

While the literature has represented, several of intra-organizational challenges concerning the open innovation practices, it is still insufficient regarding comprehensive overview. However, the academic research paid a minor attention to individual level challenges within companies. This master dissertation aims to define the individual level challenges which R&D professionals are faced on a daily basis in one particular business area – agricultural area. This will enhance the literature within research field, as well as provide a basic guideline for OI managers regarding possible barriers to implementing OI paradigm.

Furthermore, the significant literature gap has been identified concerning the relationship between open innovation practices and open business model. Finding the connection between those two concepts will allow companies to improve their innovation activities. Moreover, this could help companies to create and capture extra value. The lack of existing literature regarding this research area, determine the significant opportunities for this master thesis to add extra value, as well as to enhance the theory of open innovation paradigm.

Chapter 3. Methodology

3.1 Research design

The purpose of this master thesis is to identify and allocate the challenges on an individual and intra-organizational level which company face. As Salter (2014) states we know relatively little about the challenges that R&D professionals face in the daily pursuit of open innovation, the ways individuals cope with these challenges and the practices that organizations can introduce to help them become more efficient open innovators. Moreover, the focus of this research is to explore the relationship and interaction between open business model and open innovation activities, due to inadequate and narrow literature in this field.

The combination of research theory building methods will be used in this master thesis, namely, the method presented by Yin (2009) in his book „Case study research“ and partly the roadmap of building theory of Eisenhardt (1989) in her research study „Building Theories from Case Study Research.“ As a primary approach will be using the multiple case research method of Yin (2009) *Figure 1*, as a complementary method has been selected Eisenhardt‘ roadmap.

The first step, the research design has been created in regards with Yin, 2009 case study method. The research design connects the data collection and following conclusions concerning the central research question(s) into the current research paper. The accomplished research design could be found in *Appendix A*.

The second step in this master thesis was scanning the main body of the existing literature within Open Innovation field. The review of existing literature provides a theoretical framework as well (Yin, 2009). The purpose of the literature review was to find the related theories to the research topic of open innovation. Afterward, the literature gap concerning the connection between open business model and open innovation practices has been identified, as well as the lack of clear individual level challenges regarding the implementation of open innovation practices. Therefore, the general research question and several related sub-questions were developed and classified. The research questions were developed while keeping in mind that the research questions could shift during the actual research (Eisenhardt, 1989).

Moreover, due to the lack of adequate literature concerning the connection between open innovation activities and open business model in this master thesis case study approach will be selected as the most suitable method. The multiple case study research has been used as a primary analytical tool within this master thesis. Additionally, multiple-case designs allow the researcher to demonstrate replications and contrasts across cases, thus resulting in more substantial and invulnerable analytical conditions (Yin, 2009). He also argues that multiple cases can be analyzed as discrete experiments that serve as replications, contrasts, and extensions to the emerging theory. Each case study is reviewed as an independent study, from which convergent evidence and conclusions are being derived (Yin, 2009).

The multiple case study research which is used within master thesis is presented in figure 3.1, based on the research method of Yin 2009.

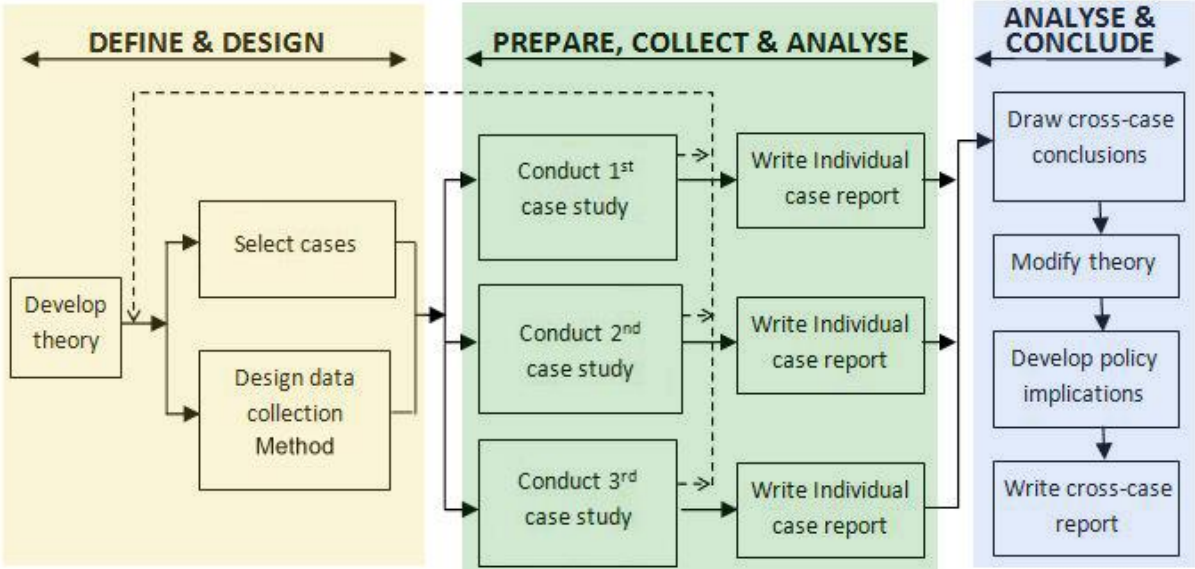


Figure 3.1. Multiple-Case Study approach, Yin (2009)

To provide enough validity of this master dissertation, there are four kinds of test in order to evaluate each case study research separately, namely, construct validity, internal validity, external validity, and reliability (Yin, 2009). For the purposes of the master dissertation, only three tests have been identified as relevant ones. This master thesis is an exploratory research, internal validity has no importance, as it is a further test used in empirical research (Yin, 2009).

Overall, three tests have been applied during data collection process, namely, application of multiple data sources, developing case study database, establishing case study protocol.

Tests	Case Study Tactic	How	Phase of research
Construct validity	<ul style="list-style-type: none"> • Use multiple sources of evidence • Establish chain of evidence 	<ul style="list-style-type: none"> • In-depth interviews and secondary sources 	Data collection
External Validity	<ul style="list-style-type: none"> • Use replication logic in multiple case studies 	<ul style="list-style-type: none"> • Apply replication logic method 	Research design
Reliability	<ul style="list-style-type: none"> • Apply case study protocol • Develop case study database 	<ul style="list-style-type: none"> • Develop case study protocol and transcript of the interviews 	Data Collection

Table 3.1 Case study tactics (Yin, 2009 p.41)

Moreover, to ensure the reliability of this master thesis case study protocol has been developed. The aim of such protocol is to create a clear path for the investigator when collecting the data from a single case (Yin, 2009). The case study protocol is presented in *Appendix B*.

Within this master thesis, three case studies have been conducted in total. Analytic conclusions independently arising from two cases are more powerful than those coming from only a single case (Yin, 2009). The purpose of conducting three case studies is to discover the basic findings regarding the research topic. The cases which have been selected concerning companies located in Bulgaria. In order to get a clear picture concerning companies background online publicity available resources has been used. Mainly, case studies sample is employing companies situated in the agricultural area. Case studies can include various data sources, such as interviews, observations, archival material, survey data, etc. (Eisenhardt, 1989). Besides, for purposes of this master thesis case study database was established, it includes, an interview questionnaire, and the transcript of all conducted interviews (*Appendix C and D*).

In this research, semi-conducted open-ended, in-depth exploratory interviews were performed with companies managers, both in Bulgarian and English through face to face communication and emails. By conducted interviews, the aim of this master thesis is to obtain the understanding of the role of open innovation practices within companies, the primary individual level challenges, as well as the relationship between open innovation activities and open business model.

3.2 Data Analysis

Once the data is already collected, the data analysis occurred. The master thesis data analysis incorporate within-case analysis and cross-case analysis. The within-case analysis allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases (Eisenhardt, 1989). The individual case study report has been created for each separate company under the scope of this research. At the beginning of each case study report, overview concerning the main company activities, type of open innovation which is applied to the company, the major individual level challenges, as well as the relationship between open innovation activities and open business model has been provided. Afterward, the conclusion concerning each case study is written.

In total, three case studies have been performed. The all of the case studies have been precisely selected, in order to be as much as relevant to the research topic and to answer to the general research question. The choice of cases should not be random but rely on the information one can draw from them, in order to contribute to the theory development (Eisenhardt and Graebner, 2007). Moreover, each case study represents the different type of open innovation practices applied within companies, namely, inside-out, outside-in and combined. This selection will allow presenting more complex general conclusions, due to the fact that it will cover all type of open innovation activities.

Afterward, the cross-case analysis has been performed, the aim of this kind of analysis is to develop the general conclusions, as well as to answer to general research question and sub-questions. The cross-case analysis allows all different cases to be compared between each other. The cross-case searching tactics enhance the probability that the investigators will capture the novel finding which may exist in the data (Eisenhardt, 1989). Due to this reason distinctions and similarities were the object of analysis in order to determine the full range of intra-organizational challenges as well as the connection between open business model and open innovation practices. The final stage of this master thesis incorporates the discussion and findings.

Chapter 4. Case Study Findings

In the following chapter, the major findings and results of the case studies are discussed. In the beginning section, it contains the individual case analysis. Consequently, the second section contains cross-case analysis.

4.1 Within case analysis

Case 1. DuPont Pioneer, Emil Todorov, Marketing Specialist

DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics, providing high-quality seeds to farmers in more than 90 countries worldwide. DuPont Pioneer provides agronomic support and services to help increase farmer productivity and profitability and strives to develop sustainable agricultural systems for people everywhere. Concerning the Bulgarian market, DuPont Pioneer is the market leader with the biggest market share in the country. The company products are highly demanding in Bulgaria. Regarding the structure of the company, it is a cooperation with clear defined hierarchy and management.

Emil Todorov says that the innovation takes the central role within the DuPont Pioneer. Also, he mentioned that industry, where the company is currently operating, is highly competitive, due to the reason the innovation is so important. In his opinion, the company will lose the leadership position within the industry, if they do not innovate effectively.

"Without innovation, constantly we will lose the competitive position in the marketplace."

Concerning the switch from close innovation model to open innovation model he states that it is crucial for DuPont Pioneer to obtain external knowledge and know-how. Moreover, in his eyes, open innovation model is a major driver for acquiring not only an external knowledge and experience, however, to achieve a competitive advantage and better market position.

"... through this external collaboration, our company is capturing an extra value, which allows us to gain a competitive advantage among the rivals."

Emil states that DuPont Pioneer is currently employing the outside-in open innovation practices. He refers it with the main collaborations with external partners; mainly the company collaborates with universities, customers, and competitors. He also mentioned that

the external value which company obtains is beneficial, in term of external knowledge and idea sources.

"... we are approaching several different channels for obtaining external knowledge and experience."

Furthermore, he adds that the company does not compose the separate team which is handling exclusively with open innovation practices. He explains that the employees are searching for external knowledge sources without dedicated working time for that. However, their core activities in the company are related to R&D practices.

"... the employees who are leading the implementation of open innovation activities are not entirely dedicated only to these activities. Their core functions as a team are focused mainly on their R&D work."

Emil highlight that one of the major intra-organizational challenges which company face is regarding unfavourable company mindset. He emphasizes the fact that changing the company mindset and culture is a hard job. As a result, the external knowledge could be rejected; even it is suitable for the company.

"After applying, OI we must start using outside knowledge, to search external sources which could support our core activities, this action comes will change in the company mindset and culture."

Moreover, Emil describes the additional intra-organizational level challenge, in particular, coordination of open innovation activities within the company. He refers it to the fact that there is not composed a separate team of a professional which main focus is exclusively on open innovation activities. Moreover, he emphasized the fact the R&D professionals do not have an allocated working time for open innovation practices. Furthermore, he mentions the lack of communication due to territorial distance is also a challenge concerning the coordination of open innovation practices.

"... coordination of daily activities and new embedded open innovation practices was a huge challenge for people who work in R&D department. ... Communication challenge has been identified as well. This is also part of the coordination of projects since many people are

included, communication from distance in some cases is not that effective as a face to face communication.”

Afterward, Emil Todorov explains that there is a clear relationship between open business model and open innovation practices. He adds that company should adjust its core business model, in order to apply the open innovation concept. Moreover, the company business model has to changes, regarding collaboration with external partners, obtaining outside knowledge and conducting related activities as well.

“I believe that open business model is a supplementary part of the whole process of enclosing the open innovation activities within the company. ... Innovation in company business model could allow easily embedded in open innovation practices.”

In his view, the company business model has to be amended suitably with open innovation activities. In particular, the way in which company captures the external value and the way in which company delivers these new values to the market. According to him, this has to be appropriately reflected within company business model.

“The way in which our company captures the values was different in term of applied external knowledge and experience. Moreover, due to our common projects with customers and competitors, we change the way of how we deliver the company value.”

DuPont Pioneer, Emil Todorov, Marketing Specialist		
Intra-organization open Innovation challenges	Unfavorable company mindset	<i>"After applying, OI we must start using outside knowledge, to search external sources which could support our core activities, this action comes will change in the company mindset and culture."</i>
	Communication challenge	<i>"This is also part of the coordination of projects since many people are included, communication from distance in some cases is not that effective as a face to face communication."</i>
Individual level challenged	Coordination of open innovation activities	<i>"One of the major challenges in front of R&D team member was an allocation of the separate time exclusively only for open innovation activities... ..coordination of day-to-day operations and new embedded open innovation practices was a huge challenge for people who work in R&D department."</i>
The relationship between open business model and open innovation activities.		<i>"I believe that open business model is a supplementary part of the whole process of enclosing the open innovation activities within the company."</i>
		<i>"The business model plays a crucial role also in arranging all related activities concerning collaboration with external partners...Innovation in company business model could allow easily embedded in open innovation practices."</i>
		<i>"...we are applying outside-in open innovation activities, to do it effectively, we amended our business model in its part of core activities, as well as a key partner, cost, and revenue structure. Collaboration with external partners requires different activities, changes in organizational structure establishing procedures and teams."</i>

Table 4.1 Within case analysis DuPont Pioneer

Case 2. Agredo Ltd., Dimitar Petkov, CEO

Dimitar Petkov is a founder and chief executive officer of Agredo Ltd. since it was founded in 2014. Agredo is mainly focusing on production and selection of high-quality seeds, as well as it provides consultations to local farmers in term of increasing productivity of the yield. The major company activities are related to producing and selecting the seeds of wheat, barley, oilseed rape, hybrids.

Dimitar Petkov believes that the main role of the innovations in the agricultural areas is to increase competitiveness, as well as to support for environmental protection. He also mentioned that the agricultural business environment in Bulgaria is highly competitive, due to this reason, innovations are essential for a small company as Agredo.

“Innovation in terms of agriculture is a method to receive a better result with fewer investments, through introducing new products and technologies, or methods, which will achieve better revenues and profits respectively.”

According to the swap from close innovation model to open innovation model, Dimitar explained that having access to outside resources and knowledge is crucial for the company because the company does not have enough experience and resources to innovate by itself. Moreover, he adds that since its creation Agredo Ltd. is employing open innovation activities.

“We successfully embedded the open innovation practices within our core activities. This allows us to be more flexible in terms of applying the latest innovative practices in Bulgaria.”

Dimitar considers that obtaining knowledge through collaboration with external partners is decisive for Agredo. Along with that, he emphasizes the fact that open innovation activities allow Agredo to develop further its initial products, and to create new business opportunities within new niche markets. Moreover, he states that the innovation activities could significantly improve the value creation.

“The main innovation in our company is related to the development of bioproducts and biostimulants. By employing open innovation practices within our company, we could capture external values and knowledge in this field.”

Dimitar Petkov considers the open innovation practices of Agredo as a combination of outside-in and inside-out practices. He emphasized the fact that mainly company is employing the outside-in approach. However, the company runs some common project with customers where engage in inside-out practices.

“I would say a combination of both types of open innovation. Mainly we have employed the outside-in approach, due to the fact the main objective of collaboration with partners to implement outside knowledge. ... If I have to estimate the percentage of open innovation activities between outside-in and inside-out, I would say that in our company is approximately 90% outside-in and only 10% inside-out.”

Agredo Ltd. is currently collaborating with a key supplier, universities, and customers. Dimitar explains that the company has different objectives in regards to various collaboration partners. According to him, each of these collaborations brings extra value to the company. However, the collaborations with DAYMSA and KWS MONONT are essential due to the fact that they bring a competitive advantage among competitors.

“... we are in collaboration with key suppliers, the university as well as some of our end customers. From of these collaborations, we revise valuable outside knowledge, ideas, and feedback.”

When considering the intra-organizational open innovation challenges, Dimitar identifies a not-invented-here syndrome as a significant barrier to implementing and approaching open innovation practices.

“During the implementation phase of open innovation practices within our company, we have faced not-invented-here syndrome as a major challenge on the intra-organizational level. The

issue was that the not-invented-here syndrome was not only an intra-organizational challenge, at the same time it appears with our end customers as well.”

According to him, the not-invented-here syndrome has been related to lack of trust concerning collaboration with key suppliers.

“... at the begging the main reason for not-invented-here syndrome in our company was a lack of trust concerning key suppliers’ collaboration.”

Afterward, he points out the individual level challenges which R&D employees in Agredo have faced during the implementation of open innovation activities. Dimitar underlines that these challenges were mainly related to lack of competencies.

“I have identified a lack of competence within Agredo employees right after open innovation activities implementation. We have start collaboration with external partners, due to this reason lack of competencies, concerning products and technologies specification was determined.”

Furthermore, Dimitar Petkov stress on the fact that the open business model and open innovation practices should be implemented simultaneously. Moreover, he explained that the company business model has to be used as a precondition for applying open innovation practices. Along to that, he states that business model of Agredo had been adjusting from the begging of application of open innovation paradigm.

“... the open business model is a supplement part of the internal company reconfiguration concerning open innovation practices.”

Regarding adjusting business model regarding different types of open innovation, Dimitar Petkov interprets that different kinds of changes should be performed concerning different types of open innovation practices. He describes that in the case of Agredo they have been amended company’ key activities, as well as key resources and value proposition design.

“... company business model must be adjusted concerning different types of open innovation. ... Since company applied open innovation practices, different aspects of our business model have been adopted as well. In common projects, together with our key partners, IP management is a crucial part of our collaboration, in the same way, knowledge sharing between partners.”

Agredo Ltd., Dimitar Petkov, CEO		
Intra-organization open innovation challenges	Not- invented- here syndrome	“The issue was that the not-invented-here syndrome was not only an intra-organizational challenge, at the same time it appears with our end customers as well.”
		“...at the begging the main reason for not-invented-here syndrome in our company was a lack of trust concerning key suppliers’ collaboration.”
Individual level challenged	Lack of competence	“We have start collaboration with external partners, due to this reason lack of competencies, concerning products and technologies specification was determined. ...knowledge change was not an easy task for us as a company. We had to establish a lot of meeting and training in order our employees to obtain the external knowledge and good practices in a short period.”
The relationship between open business model and open innovation activities.		“the open business model is a supplement part of the internal company reconfiguration concerning open innovation practices. We open company boundaries to acquire external knowledge, as well as we employed additional activities.”
		“Agredo opens company boundaries, regarding additional activities related to collaboration with different partners (key suppliers, universities, and customers). After applying external knowledge and experience we enhance the portfolio of products and services, respectively we change the value proposition of our company.”
		“we have been adopted the different organizational structure, in terms of the relationship with our key suppliers... key activities ... key resources and value proposition.”

Case 3. Ecofol, Tatyana Mihaylova, CEO

Ecofol is a family-owned company, established in 1989. The company is well-known fertilizer manufacturer in the boundaries of Bulgaria. Currently, Ecofol is the market leader in production and sales of foliar fertilizers in Bulgaria. The company aim is to make technology more popular because it delivers benefits to farmers, environment, and business. Tatyana Mihaylova is CEO of Ecofol since its foundation on 1989.

In her opinion, the innovation in agricultural field plays a significant role regarding company development and gaining competitive advantage. She proposes that innovation in an agricultural area is a combination of technical, commercial, human and financial resources. Moreover, she stresses that innovations could offer additional opportunities for the company as Ecofol.

“The role of innovation landscape of Ecofol company offers opportunities and challenges. ... Raise the outside information flows, based on the university partnership give us a chance to succeed with professional experiments and to develop exclusive high-quality products. Moreover, innovation is seen as long-term interaction with customers.”

Tatyana suggests that transaction from close innovation model to open innovation model provides a lot of advantage and opportunities for Ecofol. She states that through employing open innovation practices, Ecofol develops the company portfolio of products, as well as collaboration with external partners such as customers, allow the company to receive a valuable knowledge concerning needs and demands of the market. As a supplement, Tatyana adds that through external collaborations with universities Ecofol not only elaborate company produces, but further educate company employees.

“... through using open innovation practices, we expanded our customer base, because collaborating with different partners allows us to enlarge the company portfolio of products... As supplement activities to our core practices. Furthermore, through open innovation collaboration we could enhance the competencies of our employees, consequently to be more

efficient as a company... By collaborating with some of our customers, we gained valuable feedback which allows us to develop our core products up to their preferences.”

As an important observation that Tatyana makes is that the open innovation activities are primary drive for business development for Ecofol. Moreover, she emphasizes the fact that through using an open innovation parading company, on the one hand, obtain external knowledge and resource, on the contrary try to create a relationship between all core company innovation activities.

“Open innovation practices play a significant role in our business model. We have integrated those activities as one of our primary functions as a company... Open innovation practices allow us to create a cross-case relationship between innovations in all different levels. We are coordinating all innovation activities within our company, as well as establishing relations between them.”

Mrs. Mihaylova explains that Ecofol is currently applying outside-in open innovation practices. Moreover, through using outside-in open innovation model Ecofol, embedded external knowledge and experience from universities and customers, which helps them to improve and successfully modify existing products.

“The central reason to implement open innovation practices within Ecofol was obtaining external knowledge and experience. In this way, we could improve company competitiveness and market position... These activities enable us to implement additional practices to improve existing service and products. Moreover, through embedded external expertize from universities, we further educate our employees.”

Afterward, CEO of Ecofol acknowledge the different kind of collaborations as well as the values which company obtains from these collaborations with outside partners. The main collaboration which Ecofol employed is with company customers. Through this partnership, company sustain the new activities and compose the separate team of agronomist to develop an individual brand and specific product for each independent client. In this way, company expand product portfolio, as well as build a sustainable relationship with its customers.

Furthermore, the second fundamental collaboration Ecofol has performed together with The Agricultural University of Plovdiv. Tatyana explains that this partnership is essential because the company receives fundamental knowledge which modifies to practical products. The values which company gains are mainly related to further developing company products, as well as educating company employees.

“Collaboration with customers enables us to obtain valuable feedback and experience. Even we adjusted our business model in regards to this collaboration... Furthermore, we have established collaboration with the Agricultural University of Plovdiv. This partnership enables Ecofol to improve existing company products, as well as to develop new products ... We are trying to combine the effect of both collaborations to achieve competitive advantage regarding improving products quality and increasing customer loyalty through involvement.”

Concerning the intra-organizational level challenges which Ecofol has faced, Tatyana identifies as a primary challenge the lack of organizational structure. She argues that not composing a separate team concentrate only on open innovation activities is the main reason for this challenge.

“During the implementation process of open innovation activities, Ecofol has faced as a primary challenge the lack of organizational structure. The main reason for this intra-organizational challenge was the fact that we did not compose the separate team. R&D professional does not have enough time to search for external collaborations.”

In the same vein, Tatyana determines the managerial challenges as the main challenge, on the intra-organizational level. She underlines the fact that senior management has been struggling with finding appropriate partners at the begging of open innovation implementation.

“...we have faced managerial challenge along to that. The senior management within the company does not have enough experience with this kind of activities. We were struggling to find the most appropriate partners; even we were not sure which kind of partners to select.”

Mrs. Mihaylova emphasizes individual level challenge which Ecofol's employees had faced. She determines two major individual challenges, namely lack of competence, and cognitive challenge. The fact that senior management did not compose the separate team concerning the adaptation of open innovation activities leads the result that R&D professional could not allocate the attention appropriately regarding searching external values. In terms of lack of competencies, Tatyana states that at the beginning Ecofol senior management were unable to capture external value effectively, due to lack of experience.

"The central challenges on the individual level which the company faced was related to the lack of competencies and experience, as well as a cognitive challenge. R&D professional faced a cognitive challenge as a primary barrier during the implementation phase of open innovation activities. They did not have a separate time for exploring external possibilities regarding the outside partners or knowledge sources."

Tatyana explains that in order to overcome these challenges the senior management has to adjust the company business model. Regarding adding new the main activities, with a view to obtain more efficient external knowledge and experience, as well as to compose a separate team of agronomists which to be used as a channel between company and end customers. The main duties of this team are to "translate" clients' needs and demand to the enterprise level. Moreover, in this way, the agronomist team in collaboration with company R&D department and external university successfully implemented new products to the market concerning customer needs and requirements.

"In order to overcome these challenges, we amended the company business model. The mediate team of agronomist has been composed. This team supports the R&D department regarding "translating" the customer needs. The agronomist team has responsibilities to establish a long-term relationship with our clients."

According to Tatyana Mihaylova, the open business model plays a critical role in Ecofol regarding innovation practices. The Ecofol has been opened the company business model to apply open innovation practices more efficiently. In her opinion, the company has to amend

its business model depends on open innovation model which is applied. Also, there should be different changes according to employed open innovation practices.

“Open business model could be a precondition for the successful implementation of open innovation paradigm... With a view to collaborating effectively with external partners, the role of the business model is essential... The open innovation activities require at least several things to be amended in the business model regarding principal activities of the enterprise.”

Ecofol, Tatyana Mihaylova, CEO		
Intra-organization open Innovation challenges	Lack of organizational structure	<i>"... the fact that we did not compose the separate team. R&D professional does not have enough time to search for external collaborations."</i>
	Managerial challenge	<i>"The senior management within the company does not have enough experience with this kind of activities. We were struggling to find the most appropriate partners; even we were not sure which kind of partners to select."</i>
Individual level challenged	Lack of competencies and experience	<i>"...the lack of experience and competencies was identified as well. In the same vein, abilities of R&D employees to apply outside company boundaries knowledge, as well as additional commitments regarding new open innovation activities have been determined as individual level challenges."</i>
	Time management challenge	<i>"R&D professional faced a cognitive challenge as a primary barrier during the implementation phase of open innovation activities. They did not have a separate time for exploring external possibilities regarding the outside partners or knowledge sources."</i>
The relationship between open business model and open innovation activities.		<i>"Open business model could be a precondition for the successful implementation of open innovation paradigm... the inappropriate business model could be a challenge for implementing open innovation practices."</i>
		<i>"With a view to collaborating effectively with external partners, the role of the business model is essential. The company has to amend key activates as a primary change."</i>
		<i>"The open innovation activities require at least several things to be amended in the business model regarding principal activities of the enterprize. In Ecofol we implemented different key activities as well as new channels for searching and communicating with partners."</i>

Table 4.3 Within case analysis Ecofol

4.2 Cross case study analysis

In this section, since the individual case study reports have been performed, cross-case study analysis aims to compare the individual case studies reports, in term of similarities and differences, at the same time enabling the main research question to be answered. In general, the comparison is divided into three dimensions, namely, intra-organizational level challenges, individual level challenges and determining the relation between open innovation practices and open business model.

Table 4.4 provides the overview of different intra-organizational challenges which company faced during the implementation of open innovation practices. Firstly, the clarification should be made regarding the fact that all presented individual case study are operating in the same industry – agricultural. From the case study analysis it was observed that one of the major individual level challenges is unfavourable company mindset and culture. In order to apply successfully open innovation practices within company key activities, the organizational mindset and culture should be changed. The lack of trust considering outside partners is one of the major drivers for unsupportive company mindset. The untoward company culture could be a precondition for the failure of open innovation practices. On the one hand, sharing the confidential company information with external partners is classified as a hurdle within company mindset, as well as cooperation of the both companies business models. On the other hand, rejection of the external knowledge and experience is also a significant challenge which hampers the implementation of open innovation activities. In the same vein, the not-invented-here syndrome is recognized as an important challenge on the intra-organizational level. It neglects the external knowledge sources, due to underestimating of outside partners competencies and experience. As a consequent, the company could lose a competitive advantage, if only counting on internal company knowledge and expertize. Moreover, through rejection of outside knowledge, the company could miss valuable opportunities for future growth.

Afterward, the lack of organizational structure was classified as another intra-organizational challenge. Limited financial resources do not allow companies to compose separate team

which is responsible only for the implementation of open innovation practices within main company activities. The lack of a separate team could hamper the successful implementation of overall open innovation practices. Mainly, R&D professional is responsible for the application of OI paradigm, search external knowledge sources and partners. Furthermore, during the realization phase of open innovation practices, there is also a managerial challenge, which could obstacle the process. Identifying the most appropriate external partner could occur as managerial challenges. As well as composing the suitable organizational structure, allocating the employee's attention on open innovation activities as well.

	DuPont Pioneer	Agredo Ltd.	Ecofol
Unfavorable company mindset	Implementation of OI practices requires change in company mindset	Lack of trust concerning outside partners	n/a
Communication challenge	Territorial distance	n/a	n/a
Not-invented-here syndrome	n/a	Rejection of outside knowledge – unsupportive company culture	n/a
Lack of organizational structure	n/a	n/a	Unsupportive organizational structure – not separate team is composed regarding OI activities
Managerial challenge	n/a	n/a	Struggling regarding identifying suitable external partner(s)

Table 4.4 Cross case analysis of intra-organizational level challenges

Next, some identical individual level challenges have been identified. The time management challenge has been recognized from all three case study reports as a primary individual level challenge. Lack of balance between core work activities and new embedded open innovation practices occurs during the daily work of R&D professionals. Moreover, the shortage of allocated time for searching outside knowledge sources and practices is also the considerable barrier to successful implementation of open innovation practices. Due to this reason, it is observed that employees attention is not enough in terms of searching for external partners and knowledge sources. Afterward, coordination challenge has been perceived concerning attention based on employees daily work and open innovation activities, such as work on the common project with an external company partner.

Furthermore, within Agredo and Ecofol lack of employees competencies was detected. However, both companies resolved this challenge in a different way. On the one hand, Agredo further educated its employees regarding product specifications during collaborating with the Agricultural University of Plovdiv. On the contrary, Ecofol composed the separate team of agronomists in order to increase competitiveness in the company.

	DuPont Pioneer	Agredo Ltd.	Ecofol
Coordination challenge	Coordination between company core activities and OI practices	n/a	n/a
Lack of competence	n/a	Embedded new ways for absorbing knowledge and experience	Lack of abilities to implement open innovation practices
Time management challenge	Lack of balance between daily work and searching for outside opportunities	Without distinctive time for exploring external knowledge sources	Lack of time for exploring external possibilities regarding the outside partners or knowledge sources

Table 4.5 Cross case analysis of individual level challenges

Currently, the comprehensive overview concerning the intra-organizational level challenges, as well as individual level challenges has been provided. Next, the step is to make a cross-case analysis regarding the relation between open innovation practices and open business model.

From the case study analysis it is observed that three interviewees highlight that the open business model plays a significant role in the implementation of open innovation practices within company core activities. Furthermore, it could be concluded from individual case study reports that the open business model is an essential precondition for successful application of open innovation practices. Moreover, the similarities have been found in terms of all interviewed companies have adjusted their business model regarding open innovation activities.

Considering the *inside-out* dimension, in terms of the open business model, the companies have mainly adjusted their *key activities* during the implementation of open innovation practices. The key activities have been amended concerning additional activities related to collaboration with external partners, as well as sharing the inside value. For instance, intellectual property management has been embedded in terms of sharing company know-how to outside partner, as well as selling this intellectual property, both are included in new key activity - knowledge management systems. Moreover, concerning the common project with key suppliers, companies incorporate within their key activities managing and coordinating activities in the scope of the project.

Furthermore, concerning the *outside-in* dimension, the changes within the business model itself regarding the implementation of open innovation practices, *key company resources* have to be amended as well. Through collaborating with external partners such as universities, companies have the opportunity to use indirectly the vast scope of research equipment as well as to acquire the scientific competencies. In this way, company key resource is enhanced, in terms of collaborative partner equipment. Moreover, in collaboration with the supplier, companies acquire the external knowledge technical competencies.

Besides, resemblance has been identified regarding amending and applying the different business model regarding the implementation of various types of open innovation models, in particular, outside-in, inside-out or combination of both. The business model construction has to be distinct whereby the capturing the external values or by contrast delivering the value. The way in which the company captures the values through its business model is different in term of adopting external knowledge and experience. From the within case study reports it could be concluded that company has to adjust its business model according to different open innovation activities. Moreover, the open business model supports acquiring the external knowledge and experience, as well as it sustains the IP sharing between innovation partners.

Chapter 5. Discussion and Conclusion

This section incorporates the discussion concerning the findings from the semi-conducted interviews, as well as it proposes the contribution of the master thesis results to the existing literature. Moreover, the academic insights will be stressed concerning implications for the theory. Next, managerial implications will be presented containing practical aspects of the findings. Afterward, the limitation of this research as well as recommendations for future research will be discussed.

5.1 Theory Contribution

From the findings concluded of within case study analysis and cross-case study analysis the distinction has been made in term of intra-organizational and individual open innovation challenges. Intra-organizational level challenges, as well as individual level challenges, was identified during the implementation phase of open innovation practices. Furthermore, the relationship between open business model and open innovation practices has been explored.

Overall, five intra-organizational level challenges were determined from within case analysis. Firstly, unfavourable company mindset was identified as an important challenge during the implementation of the open innovation practices. In the same vein, it should be underlined that company culture and appropriate mindsets are primer indicators and preconditions for applying open innovation activities. Secondly, some of the companies recognized the not-invented-here syndrome as a significant barrier in front of them, concerning the application of open innovation practices. The rejection of appropriate and suitable external knowledge could be harmful to overall innovation activities within the company. Lack of trust could be classified as a substantial driver for the not-invented-here syndrome. Thirdly, lack of organizational structure was defined as challenges for some of the companies. Mainly, the lack of resources such as human and financial resources do not allow companies to compose separate teams in order to handle all related open innovation activates. Besides, the companies assigned the open innovation activities to R&D professionals, who should handle their daily work and in the same time new amended obligations related to open innovation

practices. Fourthly, communication challenges between all involved team have been detected. During some common project, the territorial distance could be an obstacle for appropriate communication. Fifth, concerning the fact that some of the interviewed companies do not have enough experience with open innovation practices managerial challenges were determined.

Afterward, findings from case study research define the three individual level challenges faced during the implementation of open innovation paradigm. The leading individual level challenges were recognized a time management challenge. An R&D professional did not have a separate time for exploring external possibilities regarding the outside partners or knowledge sources. Mainly, this is costs due to the fact that there is not a separate team for employing open innovation activities. Here, the clear connection could be built between intra-organizational challenge lack of organizational structure and the management challenge. Next, lack of experience and competencies regarding open innovation practices among R&D professional was defined through within case analysis. The new mechanism for obtaining outside knowledge and experience could be a reason for the lack of experience. Last but not least, coordination between employees' core activities and open innovation practices was acknowledged as an individual level challenge.

Furthermore, concerning the results of the cross-case analysis, the open business model plays a significant role in the implementation of the open innovation practices. Moreover, the similarities have been found in terms of all interviewed companies have adjusted their business model regarding open innovation activities. In the same vein, it was acknowledged the fact that companies have to adjust its business node concerning different types of open innovation.

5.2 Managerial Implication

In this section, will be discussed the practical aspects of findings concerning the overcoming of intra and individual level challenges acknowledged early within the master thesis. Some of the challenges which were recognized are unfavourable company mindset, the not-invented-here syndrome, lack of organizational structure, communication challenges and time management challenge. The guidelines including recommendations will be composed regarding the practical application of the results.

Firstly, the guidelines for overcoming the intra-organizational level challenges will be launched. In order to implement the open innovation practices successfully within company's core activities, the open mindset has to be provided as well as the appropriate company culture. In this aspect, communication challenges could be overcome in case that companies possess the similar culture. Effective communication between collaborative partners is an essential part of successfully implementing the open innovation practices, in terms of applying or transferring knowledge and experience. Secondly, the role of manager is essential for overcoming the not-invented-here syndrome. They have to create a strong organizational culture, as well as reward scheme in order to limited the effect of not-invented-here syndrome. Moreover, managers are responsible for appropriate introduction of open innovation concept, as well as creating suitable organizational structure and involvement scheme concerning company employee. Thirdly, the appropriate organizational structure has to be implemented, in order to allow the company to acquire the outside knowledge and competences. Moreover, the suitable organizational structure will enable the company to integrate the external knowledge flows within internal innovation activities. For instance, composing the separate team which is responsible and possess the necessary clarifications for implementing open innovation practices, is an alternative solution for creating an appropriate company structure. Fourthly, the managerial issue, in terms of lack of experience and knowledge could be resolved by composing additional knowledge management system. It will allow exploiting the knowledge sources effectively.

Afterward, the time management challenge on the individual level could be overcome through applying the appropriate company structure. The issue could be solved by composing the separate team of experienced employees in terms of open innovation practices. In this way, this team will exclusively focus on acquiring or sharing the knowledge and experience, as well as exploring external channels to launch the existing products. By re-configuration of the organizational structure could be solved the time management issue. Moreover, despite the company culture, the individual mindset and culture have to be presented as well. Open innovation managers have to apply open-minded culture within the company.

Finally, practical application of relationship between open business model and open innovation activities is presented into a re-configuration of company business model in terms of different open innovation dimensions (inside-out, outside-in and combined). Considering the inside-out dimension, the companies have adjusted their key activities in terms of IP management, sharing and selling intellectual property. Concerning the *outside-in* dimension, *company resources* have to be amended from companies, in terms of adopting scientific as well as technical competences through collaboration with external partner.

5.3 Limitations and Recommendations for Future Research

First of all, as probably the most important limitation of this thesis is the scope of this research. There will be performed only three exploratory in-depth interviews. The broader scope is needed to be provided general overview and conclusion regarding intra-organizational and individual level challenges which companies faced. Moreover, R&D employees have to be interviewed instead of CEOs of the companies. Secondly, the task related to the creation of fixed approach for overcoming challenges in different types of business model is needed to be made. Thirdly, it is necessary to be involved further detailed customization of constant changes between business blocks in each type of business cooperation. Finally, all the key findings of my research paper are focused on the agricultural area in Bulgarian boundaries. In this sense, the results/challenges are not applicable for each industry configurations.

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Appendix A

Research Design

According to Yin, 2009 research design contains five different elements which are namely: research questions, research proposition, units of analysis, connecting data to the proposition, and how to interpret the results.

1. Research question

The general research question and some related sub-questions were developed, after scanning literature concerning Open Innovation theory. The research question has been identified, due to the lack of adequate literature in the filed concerning individual level challenges within company boundaries, as well as the connection between open innovation practices and open business model.

General research question:

What are the major challenges companies are facing on the intra-organizational individual level during the implementation of Open Innovation paradigm?

Sub-questions:

How R&D individuals are dealing and overcoming these challenges?

Which are the relations between Open business model and Open innovation practices within the company?

What kind of challenges does company face regarding adjusting its business model concerning different OI types?

2. Research Proposition

Each proposition has a direct influence on the part of this thesis that should be investigated within the scope of the study (Yin, 2009). Due to the exploratory spirit of this master thesis, research proposition is not applied. Although, the main aim of this study is to enhance the existing literature concerning challenges which R&D professionals are facing during their daily

routines, as well as to explore the linkages between open innovation activities and open business model.

3. Unit of analysis

The focus of this master's thesis is to obtain sustainable knowledge concerning intra-organizational level challenges during implementation of the open innovation practices. Moreover, to get some better understanding regarding the link between the open business model and open innovation practices.

4. Connecting data to the proposition

The main concern during the design phase is to be aware of the main choices and how they might suit your case study to create a more solid foundation for the later analysis (Yin, 2009). For purposes of this master dissertations, cross-case analysis has been selected, in order to obtain the best possible insights from presented in-depth interviews, as well as to interpret the row data findings.

5. Interpretation of the results

Due to time limitation, three in-depth exploratory interviews have been conducted in the master thesis. The interviewed companies are allocated to the same industries – agricultural area, this selection aims to provide the better insights in this field, as well as to enrich the existing literature. The case selection has been made due to theoretical sample, not on the statistical one. The major focus of the master dissertation is to shed some light of literature gap concerning relations between open innovation practices and open business model, at the same time to identify the main individual level challenges which R&D professional are facing. A complete research design requires the development of a theoretical framework for the case study that is to be conducted (Yin, 2009).The literature review has been performed within Chapter 2.

Appendix B

Case study protocol

1. Change Record

Version 1 completed on 20th of July, 2017

2. Background

Concerning the relationship between open innovation practices and open business model, there is a lack of the existing literature. The main research is provided by Henry Chesbrough (2006) in his book „Open business models: How to thrive in the innovation landscape.“ Moreover, H.Chesbrough underline the importance of further research on this relationship in his research paper on (2007) „Why Companies Should Have Open Business Models." and (2017) "The Future of Open Innovation."

Regarding the intra-organizational individual level challenges which R&D professionals are facing on daily basis, the literature review shows that (Susanne Ollila and Maria Elmquist,2011) and (West et al., 2014) recognize the managerial challenges, Lichtenthaler and Ernst (2006) and Antons and Piller (2015) identified the NIH syndrome as a major challenge, Dahlander et al., (2014) and Salter et al., (2014) acknowledged the cognitive barriers, Nakagaki et al., (2012) and Angel, (2006); E. Carayannis and D. Meissner (2016) distinguished the cultural challenges. However, none of those mentioned above articles provide the comprehensive list of individual level challenges, as well as how these challenges to be overcome.

3. Design

The case study design could be found in Appendix A.

4. Data collection

The main body of data has been collected through semi-conducted open-ended, in-depth exploratory interviews, conducted both in Bulgarian and English. The channels which have been used are email communication, as well as face to face interviews. In some cases both ways of gathering data were performed, in order to obtain the most valuable information. Moreover, as a secondary data sources have been used companies websites, presentations and publicly available information. The transcript of these interviews could be found in AppendixE.

5. Data Analysis

For the purposes of each separate case study report (within case analysis) data obtained through in-depth interviews, as well as companies websites have been analyzed. At the beginning of each case study report, overview concerning the main company activities, type of open innovation which is applied to the company, the major individual level challenges, as well as the relationship between open innovation activities and open business model has been provided. Afterward, the conclusion concerning each case study is written. Then, the cross-case analysis is applied, in order to draw the conclusions and results, as well as answering the general research question and related sub-questions.

Appendix C

Interview guide

Background questions

1. Can you please introduce yourself, afterward company that you work for it?
2. Which are the core activities of your company?
3. Could you please describe the role of the innovation in a business environment which your company is operating?
4. Could you please determine the role of the innovation in your organization?

Open Innovation

5. Which were the major reasons to switch from close to open innovation? Do you think that this transaction is valuable for your company?
6. What is the role of open innovation for your business?
7. What is the main reason to apply open innovation practices in your department, company?
8. Which type of open innovation activities are currently presented in your business? (*e.g. inside-out, outside-in, combination*)
9. What kind of collaborative partnerships are performed in your company? (*e.g. competitors, customers, suppliers, universities*)

Open Innovation (individual level)

10. How did you handle the implementation of Open Innovation paradigm? Did you compose separate team?
11. What have OI adoption challenges company face on the intra-organizational level?
12. Could you identify the major challenges which R&D individuals and teams are facing during the implementation stage of OI paradigm?

Connection between Open business model and Open innovation

13. May I kindly ask you to define the role of business model with regards to Open Innovation activities? What is the connection between them according to you?
14. How Open business model support Open Innovation practices in your business?
15. Do you think that company has to have different business models regarding the various type of Open Innovation activities? If yes, how? If not, why not?
16. Did you adjust company's business model concerning transaction from Close to Open Innovation? If yes, what were the biggest challenges concerning this switch? How do you handle those challenges?

Appendix D

Interview transcripts

Case Study 1 – DuPont Pioneer

Project: Master thesis

Date and location: 19th of July, 2017, Email interview

Interviewer: Ivan Atanasov

Interviewee: Emil Todorov, Marketing Specialist

I: Can you please introduce yourself, afterward company that you work for it?

Emil: Sure, my name is Emil Todorov. I occupy a position of Marketing Specialist in DuPont Pioneer since two years. DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics, providing high-quality seeds to farmers in more than 90 countries worldwide. DuPont Pioneer provides agronomic support and services to help increase farmer productivity and profitability and strives to develop sustainable agricultural systems for people everywhere. Concerning the Bulgarian market, DuPont Pioneer is the market leader with the biggest market share in the country. The company products are highly demanding in Bulgaria. Regarding the structure of the company, it a cooperation with clear defined hierarchy and management.

I: Which are the core activities of your company?

Emil: The core activities of our company are slipped within four main areas, namely, research, production, sales and marketing, services. The main occasions are related to selection and production of seeds of corn, maize, sunflower, oilseed rape and many others. As a supplement activities, currently, the company is the focus of opening the research centers concerning the selection of hybrid products.

I: Could you please describe the role of the innovation in a business environment which your company is operating?

Emil: In the 21st century the innovation plays an important role in most of the businesses. In DuPont Pioneer, the innovation takes the central role within the company. Moreover, without innovations company, as ours can not have market positions as a market leader in our industry. The industry is very highly competitive, due to this reason innovations play the most important role among competitors. I would like to highlight that our company innovates not only its core products and technologies, as well as it innovates all related services, which comes after producer are sold. Without innovation, constantly we will lose the competitive position in the marketplace.

I: Could you please determine the role of the innovation in your organization?

Emil: DuPont Pioneer creates an innovation department worldwide. The core focus of these departments is providing the innovative solutions in all company sectors, namely, products and services, technologies, sales, and marketing. The company aim is to be an innovation leader in its field. It is a market driver for our company, it is included in our vision and mission. Currently, the company is innovating its core processes in the way of digitalization.

I: Which were the major reasons to switch from close to open innovation? Do you think that this transaction is valuable for your company?

Emil: Our company have a clear position on this topic, we are an innovative open minded company, for us, it is crucial to obtain external knowledge and know-how, this is a major driver for business development nowadays. The institutions as universities, for instance, play a decisive role in the development of our hybrids and know-how, which company received. For example, Purdue University in the USA, write publications in a relation with technologies for soil treatment (Striptill), or plant selection by using CRISPR-Cas system and est. In Bulgaria, we

also have successful collaborations with universities, for instance, Agricultural University Plovdiv. With this external partners, we are aiming to develop the potential and the quality of our products. Furthermore, through this external collaboration, our company is capturing an extra value, which allows us to gain a competitive advantage among the rivals.

I: What is the role of open innovation for your business?

Emil: The open innovation activities play an important role in our organization. In a highly competitive environment as an agricultural area, it is an essential to be able to innovate effectively. By applying open innovation activities to the company core activities, company broader its idea and knowledge sources. Open innovation allows putting external and internal ideas and resources together. Moreover, open innovation activities allow adding a unique external knowledge and experience to our core practices depending on different kind partnerships. Furthermore, in some cases, it is tough to produce something only counting on your internal knowledge and experience. In these cases it is better to implement an external know-how instead of creating it by your self, here comes the role of open innovation it allows to decrease the product launch time to the market as well as decline the overall costs. However, it is not only pitting knowledge and ideas together, but it is also much more is a process of engagement with an external company, it is a challenging task for each organization. It is a coordinating process concerning the relationships with individual external partners as well as companies.

I: What is the main reason to apply open innovation practices in your department, company?

Emil: As I already mentioned, our company is operating in highly demanding and competitive environment. In order to pose a competitive advantage, companies should be flexible. Open innovation activities allow us to innovate more efficiently than if we use only the close innovation model. Moreover, external knowledge flows are extremely important for us, the access to inside knowledge from our customers is beneficial for the company. We could obtain a clear feedback from them, as well as to understand how they see our products. Close

collaboration with our customers provide us a valuable ideas sources as well. You could understand better their needs. Furthermore, from a business point of view, one of our main reasons to apply open innovation activities in our company was an increasing revenue stream, expand our customer base and broaden our customer segments as well, and last but not least to improve innovation processes.

I: Which type of open innovation activities are currently presented in your business? (e.g. inside-out, outside-in, combination)

Emil: The main approach that we currently use concerning our open innovation activities are related to the outside-in perspective of the paradigm. We are approaching several different channels for obtaining external knowledge and experience. I will provide you several examples, firstly as I already mentioned we put a lot of efforts and resource in establishing the valuable engagements with universities in Bulgaria, namely, Agricultural University Plovdiv and the University of Ruse. The insights which could receive are really valuable for our company, in this way we have access to the latest technologies within the area, as well as we continue to develop our existing products by using the know-how and experience of university professors. Secondly, we are focused on partnership with our customers. We are determining the consistent engagement with them. The feedback and expertize which we are obtaining from them are useful, concerning usage of our products and services. In this way, we got information from “first hand.” This collaboration allows us to advance our technologies in a direction which they will be more acceptable and useful for our end customers. Moreover, throughout the years of experience, I could also add that with this collaboration we create a better relationship with our customer, as well as create a trust in our common work. Due to this relationship, we created the platform called Pioneer Portfolio Farm. We use this platform to show them the demo test, as well as the result of the application of our products. The platform is well-accepted among all farmers.

I: What kind of collaborative partnerships are performed in your company? (e.g. competitors, customers, suppliers, universities)

Emil: In relation to my previous answer in DuPont Pioneer we employed several different partnerships with external parties. Mostly, we are collaborating with universities and customers. In those cases with customers, we receive valuable insight, which helps us to develop the product and services. Moreover, we receive an essential feedback from our customers and different idea sources as well. By using platform Pioneer Portfolio Farm, we build a trust within this relationship. Regarding the collaboration with universities, we create joint projects concerning the development for some of our new hybrid products for example. The expertise and external knowledge which we gain during this collaboration is core basis to launch successful products afterward. In some cases, we perform the collaboration with some of our main competitors. It is less common than the collaborations with customers and universities, but we have experience with engagement with competitors as well. The company has common products with BASF. These common products are the result of open innovation activities performed together with a direct competitor. We have a hybrid selection by using Clearfield technology which is gene created exclusively from BASF. In summary, we are capturing the extra value from external knowledge sources. This is our main object by using the outside-in open innovation activities.

I: How did you handle the implementation of Open Innovation paradigm? Did you compose separate team?

Emil: Well, I have to highlight that the employees who are leading the implementation of open innovation activities are not entirely dedicated only to this activities. Their core functions as a team are focused mainly on their R&D work. These employees are an extension of our R&D team. They are the people who are searching for external paths to launch or new products, or seeking for external knowledge or partner. However, their core work is focused on creating new innovative products and services.

I: What have OI adoption challenges company face on the intra-organizational level?

Emil: Firstly I have to mention that applying open innovation activities within company core practices it is a challenging job. There are a lot of pitfalls where you could make a mistake. Open innovation paradigm could provide you many advantages and opportunities, however, it is a long and complicated process. One of the most distinguished intra-organizational level challenges was changing company mindset. It was a complex process to implement open innovation practices within company daily work. Changing the company culture was a prominent challenge. Until the moment of applying open innovation, our company mainly focused on internal innovation processes to create the best product within the market. After applying, OI we must start using outside knowledge, to search external sources which could support our core activities, this action comes will change in the company mindset and culture.

I: Could you identify the major challenges which R&D individuals and teams are facing during the implementation stage of OI paradigm?

Emil: Due to the fact that we do not compose a separate team concerning open innovation activities, one of the major challenges in front of R&D team member was an allocation of the separate time exclusively only for open innovation activities, in particular, searching for outside partners, identifying useful knowledge sources and ideas. In the same vein, coordination of day-to-day operations and new embedded open innovation practices was a huge challenge for people who work in R&D department. Furthermore, communication challenge has been identified as well. This is also part of the coordination of projects since a lot of people are included, communication from distance in some cases is not that effective as a face to face communication. Related to that, deadlines are also a challenge for completion of a certain project. In the agricultural area is crucial when exactly a new product or technology will be launched to the market.

I: May I kindly ask you to define the role of business model with regards to Open Innovation activities? What is the connection between them according to you?

Emil: Innovation within business model plays an important role in applying open innovation activities. The core business model of our company is mainly focused on delivering the best products with high quality to all target segments which we have. I believe that open business model is a supplementary part of the whole process of enclosing the open innovation activities within the company. If we are zoom in the business model, for instance, key activities should broaden, as well as key resources could be very different. The business model plays a crucial role also in arranging all related activities concerning collaboration with external partners.

I: How Open business model support Open Innovation practices in your business?

Emil: Here I could find a clear relationship in term of the open business model and open innovation activities. Innovation in company business model could allow easily embedded in open innovation practices. The open business model enables external knowledge and ideas to be implemented in a short period. Moreover, the company can capture external value easily, as well as to deliver extra value to its customer segments.

I: Do you think that company has to have different business models regarding the various type of Open Innovation activities? If yes, how? If not, why not?

Emil: Yes I think so. The business model must be adjusted per a different type of open innovation practices. For instance, in our company, as I mentioned before we are applying outside-in open innovation activities, to do it effectively, we amended our business model in its part of core activities, as well as a key partner, cost and revenue structure. Collaboration with external partners requires different activities, changes in organizational structure establishing procedures and teams. Moreover, in the part of protecting IP practices, we adjusted our business model as well. We have a running project with one of ours direct

competitors BASF, IP management is major new activities. To be a more effective open innovator, we have adjusted our company business model, we make it more open in terms of external collaborations, as well as implementing external knowledge flows.

I: Did you adjust company's business model concerning transaction from Close to Open Innovation? If yes, what were the biggest challenges concerning this switch? How do you handle those challenges?

Emil: Yes, we did it. Including open innovation practices within our portfolio of activities, the core of the business model has dramatically changed. The way in which our company captures the values was different in term of applied external knowledge and experience. Moreover, due to our shared projects with customers and competitors, we change the way of how we deliver the company value. The value proposition has been modified as well. Regarding key company activities, we added different functions to R&D professionals, particularly collaboration in common team project with external partners, as well as searching the ideas and established successful practices outside of the organization. I could say that we open company business model. Regarding the challenges related to the change of the business model, I could mention the cultural challenge. For an extended period, we have been used the only close model of innovation, under strict rules of confidentiality. The transaction takes a quite some time. Another important challenge which we faced was coordination between our business model and business model of our external partner.

Case Study 2 – Agredo Ltd.

Project: Master thesis

Date and location: 20th of July, 10:00 – 11:30 AM, 2017, Face to face interview

Interviewer: Ivan Atanasov

Interviewee: Dimitar Petkov, CEO

I: Can you please introduce yourself, afterward company that you work for it?

Dimitar: Hello my name is Dimitar Petkov. I am CEO and founder of Agredo Ltd. since 2014 when the company was founded. The company is one of the leaders in Bulgarian market place. Agredo Ltd has long experience in an agricultural area. We are a small company, which is concentrated in producing the high-quality products with regards to requirements of Bulgarian market. The company mainly focus on selling our product and technologies of the local market place.

I: Which are the core activities of your company?

Dimitar: The main company activities are related to producing and delivering the high-quality seeds to local farmers. The major activities are producing and selecting the seeds of wheat, barley, oilseed rape, hybrids, and est. Agredo Ltd. delivers the active solution programs to the Bulgarian farmers for using the bio stimulators in different crops.

I: Could you please describe the role of the innovation in a business environment which your company is operating?

Dimitar: The main role of the innovations in the agricultural areas is to increase competitiveness, as well as to support for environmental protection. Innovation in terms of

agriculture is a method to receive a better result with fewer investments, through introducing new products and technologies, or methods, which will achieve better revenues and profits respectively. The agricultural environment in Bulgaria is the strongly competitive business area. The innovation plays a significant role for all participants.

I: Could you please determine the role of the innovation in your organization?

Dimitar: The environmental conditions in Bulgaria requires high-quality products to insurance capacity of production. Here the innovation takes place in this field. The main innovation in our company is related to the development of bioproducts and biostimulants. By employing open innovation practices within our company, we could capture external values and knowledge in this field. Agredo Ltd is in close partnership with two key partners. This allows us to implement the best western European practices in bioproducts here in Bulgaria. These external experience and knowledge are valuable for our company. We gain a competitive advantage through using the technologies of our partners.

I: Which were the major reasons to switch from close to open innovation? Do you think that this transaction is valuable for your company?

Dimitar: I am more than convinced that the transaction is valuable for our company. We successfully embedded the open innovation practices within our core activities. This allows us to be more flexible in terms of applying the latest innovative practices in Bulgaria. Open innovation paradigm opens the company borders, create new business opportunities and collaborations. Currently, Agredo Ltd employed collaborations with different kind of partners, in this way we have a clear overview concerning the market requirements and conditions. We have access to various external knowledge sources, thanks to a collaboration with external partners such as universities. We could find many advantages of using this method for our company. For instance, from direct collaboration with some of our customers, we receive the

useful ideas for developing the new product per their needs and preferences and valuable feedback concerning the existing product or technology.

I: What is the role of open innovation for your business?

Dimitar: Open innovation takes an important place in our overall strategy. We embedded open innovation practices in our company from the very beginning. I believe that collaboration with two key partners DAYMSA and KWS MONONT is a win-win situation. By employing open innovation practices, we have the chance to use valuable outside knowledge and experience. This allows us to gain a competitive advantage among our competitor regarding high-quality seeds and supplement products. Moreover, by collaboration with our partners, we significantly decrease time to launch the new product to the market. Of course, we have a chance to use machines and technologies thanks to this partnership, this has a positive influence in terms of smaller investments and reduces the overall risks.

I: What is the main reason to apply open innovation practices in your department, company?

Dimitar: As I already mentioned, capturing outside knowledge and ideas is the main reason to implement open innovation in our company. The concept allows us to be innovative much more efficiently, since we do not have a big R&D department, and team respectively. We are a small company, we are not able to have massive financial investments, we do not have that kind of resources. Collaboration with bigger partners allows us to use external ability and technologies to develop our products. Furthermore, collaboration with universities brings extra value to our company as well. It has many positive influences over company activities. From one hand, universities, professors made a complicated analysis regarding our products, in this way we have clear evidence that our product is the most suitable and appropriate for environment and soils in Bulgaria. This is an academic explanation, however, we are searching to apply the most practical solution to our customer. From the other hand, we use this

opportunity to educate our sales departments additionally with the latest within the agricultural field. This action improves qualification of our employees, in this way they can propose the best possible practical solution to our end customers.

I: Which type of open innovation activities are currently presented in your business? (e.g. inside-out, outside-in, combination)

Dimitar: I would say a combination of both types of open innovation. Mainly we have employed the outside-in approach, due to the fact the main objective of collaboration with partners to implement outside knowledge. In this way, we are much more competitive in terms to deliver practical solutions to the market in a short period. However, we have a common project with one of our key partner where I believe the approach which uses is inside-out. We developed some of their core product, our R&D professionals in collaboration with the Agriculture University in Plovdiv found the different application form, based on components of this product. If I have to estimate the percentage of open innovation activities between outside-in and inside-out, I would say that in our company is approximately 90% outside-in and only 10% inside-out.

I: What kind of collaborative partnerships are performed in your company? (e.g. competitors, customers, suppliers, universities)

Dimitar: Currently, we are in collaboration with key suppliers, the university as well as some of our the end customers. From of these collaborations, we revise valuable outside knowledge, ideas, and feedback. As I mentioned earlier, the main collaboration for our company is that one with our two key suppliers, namely DAYMSA and KWS MONONT. They have collaborated with the very the very begging of our company. We gain external experience, knowledge and idea flow from them. Moreover, we are able to implement the best practices in our company. The purpose of our company every year is to develop in

partnership with these companies at least one new product and service or to upgrade the string ones. Furthermore, we made a collaboration with an Agricultural University in Plovdiv. The main purpose of this collaboration is related to testing our products, to find the most appropriate application of our bio stimulators, to develop new products. In Bulgaria, Agricultural University poses an enormous trust among farmers. Due to this reason, they are our key partner as well. We show the results which are made by them to our end customer, in this way we build a trustful relationship with our end customers. Moreover, thanks to this collaboration we have the opportunity to educate further and prepare our sales team, to make it aware of the latest trends in the agricultural environment, as well as to learn all specifications and details of company products. In this way, they are much more confident to sell and offer company products. The result is that we have more educated and well-prepared team, respectively we achieve more sales and revenues. Moreover, the last collaboration which has been performed within our company is with several of our biggest end customers. It is mainly for producing the clear sample of seeds. We provide to our customer's seeds which they used within demo experiments. Afterward, once the seeds are developed to C2 level, farmers came back to us in order to sell these seeds again. In this way, we gain a real life experience with our products.

I: How did you handle the implementation of Open Innovation paradigm? Did you compose separate team?

Dimitar: No, we do not have an independent team exclusively for open innovation activities, due to the fact that we are a small company and we do not have enough financial resources in order to compose a separate team of professionals. Mainly, me as a CEO of the company embedded and introduced the open innovation practices within Agredo Ltd. Of course, I have a previous experience with open innovation activities, due to this reason I was aware concerning different challenges and specifications regarding the implementation of open innovation paradigm. Moreover, the whole sales team is involved in open innovation activities, all sales professionals are searching external ideas and knowledge sources. Due to

the fact that they have the direct contact with our end customers, a sales representative has the change to evaluate and identify the potential partners in the face of end customers for instance.

I: What have OI adoption challenges company face on the intra-organizational level?

Dimitar: During the implementation phase of open innovation practices within our company we have faced not-invented-here syndrome as a major challenge on the intra-organizational level. The issue was that the not-invented-here syndrome was not only an intra-organizational challenge, at the same time it appears with our end customers as well. The customers were a skeptic at the beginning due to the fact they were not sure that these products would be well implemented in Bulgarian environment conditions. However, let stick to your question concerning intra-organizational challenges, at the begging the main reason for not-invented-here syndrome in our company was a lack of trust concerning key suppliers' collaboration. We had to collaborate not only our teams and to exchange some experiences, however, but we must also cooperate our business models.

I: Could you identify the major challenges which R&D individuals are facing during the implementation stage of OI paradigm?

Dimitar: I have identified a lack of competence within Agredo employees right after open innovation activities implementation. We have start collaboration with external partners, due to this reason lack of competencies, concerning products and technologies specification was determined. Moreover, knowledge change was not an easy task for us as a company. We had to establish a lot of meeting and training in order our employees to obtain the external knowledge and good practices in a short period. In my opinion lack of competence among employees in combination with not-invented-here was the major individual level challenge which we faced. As a supplement to that, we faced a challenge to convince the Bulgarian

farmers that the French and Spanish products will be appropriate for environmental conditions in the country. Here the collaboration with the Agricultural University of Plovdiv plays a significant role, to test products, as well as to show that these products are proper for usage in Bulgaria. We have organized several conferences to present these tests informed of our biggest customers. Moreover, our sales representative organizes several field demo experiments to represent the quality of the seeds and supplement products.

I: May I kindly ask you to define the role of business model with regards to Open Innovation activities? What is the connection between them according to you?

Dimitar: As I mentioned before, we start applying open innovation practices from the very beginning in our company, due to this reason we do not adjust company business model significantly. I could say that we open our business model at the same time with implementing open innovation practices. According to me, the open business model is a supplement part of the internal company reconfiguration concerning open innovation practices. We open company boundaries to acquire external knowledge, as well as we employed additional activities.

I: How Open business model support Open Innovation practices in your business?

Dimitar: In order to innovate more effectively companies should adjust the business model in regard to open innovation activities. Agredo opens company boundaries, regarding additional activities related to collaboration with different partners (key suppliers, universities, and customers). After applying external knowledge and experience we enhance the portfolio of products and services, respectively we change the value proposition of our company. We have been able to propose additional value to our customers. Another key element of a business model which has been changing is key resources, for example, our collaboration with universities allow us to use (indirectly) the equipment if the university in term of performed

tests and analysis of our products. Furthermore, regarding collaboration with key suppliers, we can use their demo files to test our products, as well as professional equipment regarding machines and est. Overall, the developments are able because we embedded open innovation practices, however, and because we open up our business model.

I: Do you think that company has to have different business models regarding the various type of Open Innovation activities? If yes, how? If not, why not?

Dimitar: Yes I believe so. In my opinion, company business model must be adjusted concerning different types of open innovation. In the case of Agredo, we mainly employed the outside-in open innovation activities. Due to this reason, we have been adopted the different organizational structure, in terms of the relationship with our key suppliers. Moreover, we have been adopted additional key activities. Furthermore, thanks to outside knowledge and resources we adapted the company key resources and value proposition. On the other hand, regarding inside-out open innovation practices, the company business model changes in regards to key activities. Moreover, sharing the particular part of company business model with your collaboration partner requires some changes within the business model itself. This change is related to securing the company intellectual property, namely licenses and know-how. In the same vein, new activities related to selling this intellectual property. Currently, we are using the only one business model due to the fact that major open innovation practices are related to outside-in type.

I: Did you adjust company's business model concerning transaction from Close to Open Innovation? If yes, what were the biggest challenges concerning this switch? How do you handle those challenges?

Dimitar: We have been changed the company business model in terms of open innovation activities. Since company applied open innovation practices, different aspects of our business

model have been adopted as well. In common projects, together with our key partners, IP management is a crucial part of our collaboration, in the same way, knowledge sharing between partners. It is the same situation in collaboration with some of our key customers, transferring knowledge inside-out is a new activity which has been adjusted within our business model. Again, in collaboration with customers, channels which we use to reach new customer groups have been changes, adopted within company business model respectively. Within close innovation model, we had used one value proposition in terms of value which we could create only internally, once we switched to open innovation model, the company value proposition has changed as well, in terms of captured external knowledge and experience.

Close.

Case Study 3 – Ecofol

Project: Master thesis

Date and location: 21st of July, 16:00 – 17:30 AM, 2017, Face to face interview

Interviewer: Ivan Atanasov

Interviewee: Tatyana Mihaylova, CEO

I: Can you please introduce yourself, afterward company that you work for it?

Tatyana: My name is Tatyana Mihaylova. I am the CEO of Bulgarian agricultural company Ecofol. It is a pleasure to be part of your master project. ECOFOL is a family-owned company, established in 1989. We are well-known fertilizer manufacturer in the boundaries of Bulgaria. Currently, Ecofol is the market leader in production and sales of foliar fertilizers in Bulgaria. Our aim is to make our technology more popular because it delivers benefits to farmers, environment, and business.

I: Which are the core activities of your company?

Tatyana: Ecofol has the vast range of core activities related to the modern agro field: developing crop protecting fertilizers, applying science and technology advancements for growing population yields and creating a social engagement with customers that guarantee our future prosperity.

I: Could you please describe the role of the innovation in a business environment which your company is operating?

Tatyana: Innovation in the agro field is a critical process for sustainable development. In my point of view, it is a complex interconnection between technical and commercial resources, human capacity and financial competencies with the portfolio of divisive outside participants.

I: Could you please determine the role of the innovation in your organization?

Tatyana: The role of innovation landscape of Ecofol company offers opportunities and challenges. For example, raise the outside information flows, based on the university partnership give us a chance to succeed with professional experiments and to develop exclusive high-quality products. Moreover, innovation is seen as long-term interaction with customers. It is based on the improved social service by making permanent team buildings, workshops, open days, demo samples that help us for creating the bridge of trustability with customers.

I: Which were the major reasons to switch from close to open innovation? Do you think that this transaction is valuable for your company?

Tatyana: Our company recognized several advantages to switch from close to open innovation. Firstly, through using open innovation practices, we expanded our customer base, because collaborating with different partners allows us to enlarge the company portfolio of products. In this way, we could reach broader customer segments. Secondly, open innovation practices enable the company to engage external practices and experience, as supplement activities to our core practices. Furthermore, through open innovation collaboration we could enhance the competencies of our employees, consequently to be more efficient as a company. Last but not least, by collaborating with some of our customers, we gained valuable feedback which allows us to develop our core products up to their preferences. In this way, we can gain a competitive advantage among competitor.

I: What is the role of open innovation for your business?

Tatyana: Open innovation practices play a significant role in our business model. We have integrated those activities as one of our primary functions as a company. Open innovation is a primary driver for the company business. Open innovation practices allow us to create a cross-case relationship between innovations in all different levels. We are coordinating all innovation activities within our company, as well as establishing relations between them. Moreover, we could have the chance to implement outside knowledge and expertize which

allows us to be more competitive in the market place. Through open innovation collaboration, we optimize and develop company services and products.

I: What is the main reason to apply open innovation practices in your department, company?

Tatyana: The central reason to implement open innovation practices within Ecofol was obtaining external knowledge and experience. In this way, we could improve company competitiveness and market position. Direct collaboration with some of our customer enables us to receive valuable insights and feedback. Through this collaboration, we adjusted our core business practices. We have changed the company business model regarding activities and channels. Overall, implementation of open innovation paradigm pushes up our business to the next level.

I: Which type of open innovation activities are currently presented in your business? (e.g. inside-out, outside-in, combination)

Tatyana: Currently we are employing the outside-in open innovation activities. We had adjusted company business model to implement outside-in open innovation activities. Furthermore, as a company, we consider those outside-in activities beneficial for our business. These activities enable us to implement additional practices to improve existing service and products. Moreover, through embedded external expertise from universities, we further educate our employees.

I: What kind of collaborative partnerships are performed in your company? (e.g. competitors, customers, suppliers, universities)

Tatyana: As I mentioned earlier, we are employing outside-in open innovation practices. Mainly our collaborations are with our customers as well as universities. I have to highlight that the object of each partnership is different. However, we are trying to combine the effect of both collaborations to achieve competitive advantage regarding improving products quality and increasing customer loyalty through involvement. Collaboration with customers enables

as to obtain valuable feedback and experience. Even we adjusted our business model in regards to this collaboration. We composed an independent team of agronomist as a new channel of communication with the customer. Afterward, we create new activities regarding producing exclusive products for some of our biggest clients, connected to their personal preferences and requirements. Moreover, we run out a project for creating a personal branding concerning these exclusive products. In this way, collaboration with our customers, increase overall customer satisfaction as well as improve competitive advantage. Furthermore, we have established collaboration with the Agricultural University of Plovdiv. This partnership enables Ecofol to improve existing company products, as well as to develop new products regarding collaboration with our customers, according to their specific needs and requirements in the field.

I: How did you handle the implementation of Open Innovation paradigm? Did you compose separate team?

Tatyana: The implementation of open innovation paradigm was the main responsibility of the senior managers in the company, including me as CEO. We embedded open innovation practices without composing a separate team. R&D professionals had been involved in the later stage within the overall process. We have added to their core activities and responsibilities, new activities related to open innovation practices.

I: What have OI adoption challenges company face on the intra-organizational level?

Tatyana: During the implementation process of open innovation activities Ecofol has faced as a primary challenge the lack of organizational structure. The main reason for this intra-organizational challenge was the fact that we did not compose the separate team. R&D professional does not have enough time to search for external collaborations. Moreover, as a complementary to above mentioned, we have faced managerial challenge along to that. The senior management within the company does not have enough experience with this kind of activities. We were struggling to find the most appropriate partners; even we were not sure which kind of partners to select. Then, we decided to adjust the company business model, in

the term to add extra activities for searching outside partners, as well as we compose separate team which primary purpose was to establish a relationship with the customers.

I: Could you identify the major challenges which R&D individuals and teams are facing during the implementation stage of OI paradigm?

Tatyana: The central challenges on the individual level which the company faced was related to the lack of competencies, as well as a management challenge. R&D professional faced a time management challenge as a primary barrier during the implementation phase of open innovation activities. They did not have a separate time for exploring external possibilities regarding the outside partners or knowledge sources. The additional responsibilities of their daily work were not successfully performed, as the primary ones. Due to this reason, they have struggled with processing open innovation practices. Moreover, the lack of experience and competencies was identified as well. In the same vein, abilities of R&D employees to apply outside company boundaries knowledge, as well as additional commitments in terms of new open innovation activities have been determined as individual level challenges.

In order to overcome these challenges, we amended the company business model. The mediate team of agronomist has been composed. This team supports the R&D department regarding “translating” the customer needs. The agronomist team has responsibilities to establish a long-term relationship with our clients. Then the new business opportunities have been recognized. The agronomist team acknowledged the need for different product concerning specific needs of each separate client. Here collaboration with universities takes place. By collaboration with universities, our R&D department has a chance to test and develop new products regarding specific needs of our customers. Ecofol has been created a personal branding for each separate client. By doing this, we significantly increase the trust level between our customer and us, because we were partners are creating new products.

I: May I kindly ask you to define the role of business model with regards to Open Innovation activities? What is the connection between them according to you?

Tatyana: Open business model could be a precondition for the successful implementation of open innovation paradigm. I could identify a lot of connection between both. As I mentioned several times already, we have adjusted Ecofol business model some time to be more efficient open innovators. With a view to collaborating effectively with external partners, the role of the business model is essential. The company has to amend key activates as a primary change. Furthermore, the inappropriate business model could be a challenge for implementing open innovation practices.

I: How Open business model support Open Innovation practices in your business?

Tatyana: Well, in term of appropriate business composition I could say. The business model determines the way how the company operates. The open innovation activities require at least several things to be amended in the business model regarding principal activities of the enterprize. In Ecofol we implemented different key activities as well as new channels for searching and communicating with partners. Moreover, we have established the independent team of an agronomist, which could be determined as key resources for the company. Through the team, we receive feedback concerning our client's needs. Afterward, through collaboration with universities and our R&D department, we develop new products and brands.

I: Do you think that company has to have different business models regarding the various type of Open Innovation activities? If yes, how? If not, why not?

Tatyana: Yes it should have. Each different type of open innovation has a specification which has to be reflected within company business model. In the case of Ecofol, we have been employing outside-in open innovation model, due to this reason we have adjusted the main activities, value proposition, channels and broader customer segments.

I: Did you adjust company's business model concerning transaction from Close to Open Innovation? If yes, what were the biggest challenges concerning this switch? How do you handle those challenges?

Tatyana: Yes, we have amended several components in our company business model. In order to implement open innovation practices more successfully, we have adjusted, main company activities, channel, value proposition, key resources.

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Voor akkoord,

Atanasov, Ivan

Datum: **23/08/2017**