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**E-INVOICE SERVICE PROVIDERS INTEROPERABILITY:  
COOPETITIVE STRATEGY IN EUROPE**

Master's thesis

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## TABLE OF CONTENTS

INTRODUCTION .....	4
1. COOPETITION THEORETICAL FRAMEWORK .....	9
1.1. Essence and role of coopetition.....	9
1.2. Advantages and disadvantages, enablers and barriers of coopetition in strategic networks .....	20
2. COOPETITION MOTIVATORS AND BARRIERS IN EUROPEAN E-INVOICE SERVICE PROVIDERS INTEROPERABILITY .....	33
2.1. Introduction of Electronic Data Interchange (EDI) coopetition, empirical study methodology and sample selection.....	33
2.2. Interoperability cooperation motivators and barriers according to e-invoice service providers in EESPA .....	45
SUMMARY .....	67
REFERENCES.....	72
APPENDICES .....	78
APPENDIX 1: Members list of EESPA.....	78
APPENDIX 2: Survey questionnaire from QuestionPro platform.....	85
APPENDIX 3: Description of research process .....	91
APPENDIX 4: Research proposal to EESPA .....	94
RESÜMEE .....	95

## INTRODUCTION

Real-Time Economy (RTE) and digitalization-driven innovation have been on the past decade the main driving forces in the economies of the member states of European Union (EU) and the world economy in general. The concept of RTE means that all the transactions between commercial business parties are happening in digital format, automatically generated and completed in real time with no or minimum human intervention (Penttinen 2008). The mission of RTE as the new paradigm is to establish and connect business ecosystems for real-time transactions with the purpose to radically advance services and productivity for EU citizens as well as to take the harmonization of the EU Single Market to a new level (Harald 2018). RTE with its' full automation of commercial and administrative information, standardization of business data message content, interfaces and databases, automatic regulatory reporting, all transactions and digitally performed activities happening in real-time contributes to automated accounting, electronic book-keeping and also electronic archiving (What is Real-Time... 2018). Building blocks of RTE contain among others real-time payments (SEPA), e-Invoicing, e-Procurement, automated VAT-reporting, automated salaries tax reporting (Harald 2018; Soe 2015).

Use of e-invoices and other electronic business documents in the supply chain, but also atomization of finance processes is increasing rapidly with the purpose to make enterprises' business processes more efficient. Apart from the private sector, also governments are having much interest in digital and real-time trade information as diminishing underground economy is the priority of every country. Thus, reducing the VAT gap and increasing transparency are the primary drivers for digitalization of any documents – business, fiscal, reporting, inventory, trade, and logistics (Koch 2017).

According to Billentis 2017 E-Invoicing / E-Billing report by Bruno Koch<sup>1</sup>, there are more than 10 000 different Enterprise Resource Planning (ERP) systems and accounting solutions in Europe alone, and much more in the world which all “speak a different language”. The Electronic Data Interchange (EDI) operators and e-invoice service providers are needed for to translate, process, and transmit those electronic documents carrying the business data between trade partners. Each service provider has its own value-added network (VAN) within what the electronic document exchange between trade partners (buyers and sellers) is happening.

Because EDI and e-invoice operators’ business model relies on the network externality, the network size (how many trade partners are connected to the network) and density (how many active links to other trade partners each partner has) are critical success factors. Value of electronic document exchange will increase to all parties in the network the more each member (customer) exchange electronic documents with other partners. Interoperability of EDI and e-invoicing operators enable the customers in different service providers’ networks to exchange e-invoices and other electronic documents between the networks.

This master thesis aims to find out what are the advantages, disadvantages, enablers, and barriers to interoperability cooperation among e-invoice service providers. For to achieve the aim of the thesis, the primary research tasks are:

- define the essence and role of cooperation (chapter 1.1.)
- clarify the advantages, disadvantages, enablers, and barriers of cooperation in network level inter-firm relationships (chapter 1.2.)
- introduce the context of Electronic Data Interchange (EDI) cooperation, empirical study methodology, process and sample selection (chapter 2.1.)
- based on quantitative survey clarify and analyze the advantages, disadvantages, enablers, and barriers to interoperability cooperation among EESPA members (chapter 2.2.).

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<sup>1</sup> Billentis report by Bruno Koch is the leading industry specific annual expert opinion about global electronic billing and invoicing adaption. Each international market report covers general trends, market overviews and forecasts as well as detailed country and region specific analyses. (Remark by the author based on: <https://www.billentis.com> )

The research subject is fascinating because service providers are all competitors, who offer basically the same kind of services – exchange of e-invoices and other electronic business documents with different value-added services in financial processes automation and EDI in the supply chain. Apart from satisfying their customer's needs and market demands, they cooperate for the more significant purpose – to promote and enhance e-invoicing both nationally and cross-border, improve interoperability between each other by advancing technical solutions, unify standards for better compliance and agree on a common framework for best practices. This kind of cooperation reinforces digital innovation in general and is a win-win situation for all stakeholders.

The topicality of the subject is also related to the EU Directive 2014/55/EU which will become effective in 2019 and make e-invoices mandatory for the public sector in public procurement (EUR-Lex... 2018). This directive has been transposed to national legislation of EU member states. Many countries have taken action-steps toward fulfilling this obligation to enable a seamless flow of e-invoices within the country and across the EU. It has a broader impact not only on the public sector but also to the private sector, especially to those companies who are supplying to the public sector.

As service providers are direct competitors to each other, the interoperability involves for them collaboration and competition at the same time. This phenomenon of simultaneous cooperation and competition is called *coopetition* – a term coined and brought into a business environment in the 1980s by Raymond John Noorda, founder, and CEO of the American software company Novell (Bouncken *et al.* 2015; Bengtsson, Kock 2014). After the best-selling book *Co-opetition* by Brandenburger and Nalebuff was published in the middle of 1990s, the broader interest from academic scholars started for coopetition research. The core idea from the book is based on game-theoretical approach: firms collaborate with the purpose to increase the size of the “business pie” and then compete in dividing it (Ritala 2012). The coopetition topic has great importance in the information and communication technology (ICT) sector due to its industry specifics – strong technological convergence, high R&D costs and short product life-cycle are the major reasons for to implement the cooperative strategy with competitors in the market (Pellegrin-Boucher *et al.* 2013)

The empirical part of the thesis analyses the interoperability cooperation among the members of European E-Invoicing Service Providers Association (EESPA). The expected result is to clarify what are the main motivators and main problems and barriers for e-invoice service providers in cooperation and interoperability. EESPA is a Pan-European non-profit trade association involving more than 70 leading e-invoice service providers who offer a wide range of value-added services related to technologies of VAN, EDI, financial processes automation and compliance. EESPA focuses on improving the widespread adoption of e-invoicing, creation of an interoperable eco-system for it, helping to set public policies and solving compliance issues (EESPA... 2018 ). Increasing the awareness and addressing the topic should benefit interoperability cooperation between service providers and thus help to improve the spreading of electronic business documents in the big picture, both in public and business sectors.

As known to the author, the interoperability cooperation and coepetition from the perspective of EDI and e-invoice service providers have not been researched earlier, and this thesis intends to fill that research gap. Structure and logic of the thesis targets to introduce the theoretical insights in the first chapter by defining the essence and concept of coepetition, presenting the ideas of key authors about the existing typologies, and then focuses on inter-firm coepetition on network level by analysing the model of four aspects in coepetition: advantages, disadvantages, enablers and barriers. The empirical part in the second chapter will carry on this model into quantitative survey among members of EESPA and introduces the context, research methodology adopted to collect and analyze the data, which is followed by thorough analyses of research findings. This part of the thesis is aligned with the research tasks formulated earlier. The thesis ends with a summary also indicating the limitations and possible direction for further research.

The author would like to thank Ahti Allikas, the Executive Committee member of EESPA for the highly appreciated contribution to the survey content design in empirical study and introducing the research proposal to the Executive Committee of EESPA; Charles Bryant, Secretary General of EESPA for support, valuable input to finalizing the questionnaire and for making the survey among members of EESPA possible; Dora Cresens from EESPA secretariat in Brussels, Belgium for all the effort in distributing the survey and help in collecting the answers; Toomas Veersoo for the contribution to the

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Keywords of the master thesis: coopetition, interoperability cooperation, strategic networks, cooperative strategy, information and communication technology, e-invoicing, electronic data interchange



# 1. COOPETITION THEORETICAL FRAMEWORK

## 1.1. Essence and role of coopetition

“No business is an island”<sup>2</sup> is the metaphor which applies more than ever to the economic environment and business relationships in information era in the world of globalization, interdependence, and digitalization. Cooperation of different kinds and in different levels (both, intra- and inter-organizational) is essential for survival. So is the collaboration with competitors. Håkansson and Ford (2002) argue that no company has all the resources on its own for to meet their customer’s expectations and demands. Instead, they rely on their cooperation partners’ skills, actions, resources, and intentions. Suppliers, distributors, but also other customers and competitors are considered as cooperation partners to the company. Relationships are essential for managing technological interdependence with others and the demand to meet the specific requirements in company’s offerings. Interdependence between companies determines the strategy process to be responsive and consider the scope and dynamics of existing and potential inter-firm relationships, as well as take into account the internal and external limitations when planning most efficient ways of action (*Ibid*).

Hamel *et al.* emphasize the importance of collaboration in the context of entering new markets and developing new products, as it is very costly for a company to do it all alone, also taking into the consideration time as another critical factor (Hamel, Doz, Prahalad 1989). Thus, alliance with the competitors is beneficial from several perspectives - in sharing the costs and new market entry risks, but also to meet better the customer's requirements in existing markets.

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<sup>2</sup> Referenced from the article title „No business is an island: The network concept of business strategy“ by Håkan Håkansson and Ivan Snehota, published in Scandinavian Journal of Management 1989, vol.5, issue 3, pp 187-200

The term “coopetition” was coined and brought into a business environment in the 1980s by Raymond John Noorda (founder and CEO of the American software company Novell) for to explain the attempt of simultaneous cooperation and competition by firms. Later, in 1992 he also applied the concept to describe Novell’s business strategy (Bengtsson, Kock 2014; Bengtsson, Raza-Ullah 2016; Bouncken *et al.* 2015; Luo 2007). The term originates from two words combined - “cooperation” and “competition” – and is used to describe relationships where the parties cooperate and compete at the same time. This simultaneity makes the relationship complex and challenging as there are present both aspects, the cooperation and the competition. The level of complexity in the cooperative relationship depends on relationship type, context, parties involved and other factors.

The core idea of cooperative business relationships is to establish mutually beneficial partnership relations with other actors in the business ecosystem, including competitors. For example, companies create a strategic alliance for product development and innovation, but simultaneously also compete with each other in selling and marketing of these same products they developed in collaboration. Coopetition thus involves two different interests at the same time – interaction in rivalry because of conflicting interests, and collaboration thanks to shared interests. The general goal of the coopetition is to create mutual benefits and added value (Zineldin 2004). Definition of coopetition has been conceptualized in academic literature in two ways according to Pellegrin-Boucher *et al.* (2013):

- 1) the broad perspective, implemented by Brandenburger and Nalebuff in 1995-1996 with their ground-breaking book *Co-opetition* which describes coopetition phenomenon as relationships value-net established between complementary organizations;
- 2) the specific and more precise approach presented by Bengtsson and Kock in 1999 defines coopetition as a form of relationship between direct competitors.

These two concepts also distinguish the differences in the typology of cooperative relationships: the broad perspective of Brandenburger and Nalebuff is about general coopetition while the more specific concept of Bengtsson and Kock is focused on horizontal relationships between competitors (Pellegrin-Boucher *et al.* 2013).

According to Dorn *et al.* (2013), one of the most well-liked definitions of the coopetition by scholars is the one offered by Bengtsson and Kock, who stated the coopetition to be a relationship which simultaneously contains both cooperation and competition elements. The author of this thesis also prefers this view as it suits the best in the context of th work to describe and define international collaboration of competitive organizations.

In business relationships, the coopetition is considered rather as an inter-organizational relationship type between competitors containing both aspects – cooperation and competition. The inter-organizational collaboration is defined as an agreement between two or more firms to collaborate and jointly pursue their own respective goals within the framework of cooperation specifying the agreed scope, relevant roles and coordination of work with the purpose of maximum efficiency for both parties (Wilson, Nielson 2000). The competitive aspect of relationships of coopetition has the characteristics of competition. Zineldin (2004) describes competitive psychology as the tendency of being superior to others and emphasizes gaining benefits of more resources at others expense. In economics, competition is observed as “a horizontal conflict of interests, a situation of rivalry between two or more organizations that target the same segment of customers” (Pellegrin-Boucher *et al.* 2013:73).

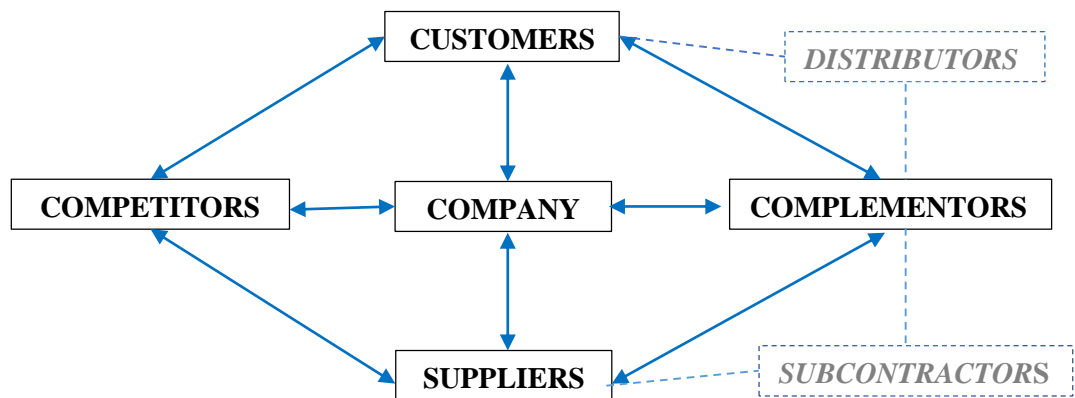
Depending on the context and perception of the phenomenon, the definition of coopetition and its´ essence may vary by meaning. Bengtsson *et al.* (2014) argue that unambiguous definition is missing and researchers have employed different definitions. They bring out five approaches to coopetition definition from previous studies:

- Coopetition defined as a *value-net* consisting of company´s suppliers, customers, competitors and complementors – this is the core idea from Brandenburger and Nalebuff which will be described in more detail further on.
- Coopetition as cooperation between *two direct competitors*, which can occur within the multinational enterprise (Luo 2005), in inter-firm relationships (Gnyawali *et al.* 2015) and within business networks (Bengtsson, Kock 2000).
- Coopetition as *triadic relationships* in which collaboration between some parties affects competition among others. This approach is used in supply network and supplier-buyer relationships researches (Dubois, Fredriksson 2008).
- Coopetition defined as an appearance *between supply chains* (Wilhelm 2011).

- Coopetition as the coexistence of competition and cooperation *between networks* (Peng, Bourne 2009).

One thing common in all approaches is that they all contain the element of cooperation and competition happening concurrently between the parties involved.

**History and theoretical background of coopetition.** The scholars have researched coopetition as a phenomenon in business relations for more than two decades. Origin of the concept of coopetition is associated to game-theoretical approach in economics research related to real-world mixed-motive games as referenced from Schelling's book on conflict strategies (Mariani 2007). If before late 1980s coopetition was assumed as a price-discriminating mechanism, then from late 1990s it became widely accepted as a value-creative strategy for all firms involved and for end customers, because it helped to improve existing products and create new ones (Ritala 2012). Wider recognition and implementation of coopetition as a business strategy started after 1996, when Brandenburger and Nalebuff published their best-selling book *Co-opetition*, which relies on game theory and where the core idea is that coopetition is a value net of relationships between the actors involved in business – suppliers, customers, competitors, “complementors” and company itself. According to them in the “game of business” there is the added value that each “player” brings to the business “game”. Value is defined by the customer's and supplier's perspective. “Complementors” are defined as players who increase the value of company's product to the customer: “...customers value your product *more* when they have that player's product than when they have your product alone” (Nalebuff, Brandenburger 1997:30). Competitors are defined as well through customer's value perception: “A player is *competitor* if customers value your product *less* when they have that player's product than when they have your product alone.” (*Ibid*). See figure 1 for the illustration of the value net.



**Figure 1.** The value net of coepetition by A.Brandenburger and B.Nalebuff adapted by the author based on (Nalebuff and Brandenburger, 1997:30; Zineldin 2004:781)

Zineldin (2014) later adds to the value net also distributors and subcontractors as part of the actors who conjointly add value to each other's organizations. For to illustrate the value net, he brings an example of Dell and Compaq who compete in development and manufacturing of hardware, but at the same time cooperate with software companies Netscape and Microsoft.

Following the fundamental work of the two scholars and consultants, the Harvard Business School's Adam M. Brandenburger and the Yale School of Management's Barry J. Nalebuff, other scholars around the world also started to research and explain the phenomenon of coepetition by relying on several different theories, like the transaction cost theory, institutional economics, game theory, dynamic capabilities theory and the resource-based view related to economic aspect. Also, organization theories have been applied, such as social network theory and organization/strategic learning theory (Bouncken *et al.* 2015). Most of the academics in the past two decades relate coepetition studies to strategic management science and strategy research in general.

Pellegrin-Boucher *et al.* (2013) make a review of the traditional economic approach from *strategic management science* which reckoned competition as the only way of engagement to the companies within the same industrial sector. According to this approach each company had to create their unique competitive advantage and added value to customers independently. Later new theoretical models arose which emphasized the opposite idea: the real source of value creation relies on cooperation with other

organizations. This viewpoint determined success by firms' capability to establish long-term partnerships instead of fighting against everybody (as proposed in hyper-competition theory) (*Ibid*).

Coopetition has been studied in various industries. Bouncken *et al.* (2015) listed them in their systematic review of previous studies by pointing out producing sectors, retail, engineering, information and communication technology, and also service sectors, such as healthcare, tourism, transportation, finance and some others. The author of this thesis refers to just a few of them selecting those which are relevant for the context of this work – mainly the researches related to knowledge- and technology-intensive sectors.

One of the earliest and later on widely recognized and referenced coopetition studies was done by Hamel, Doz and Prahalad in the 1980-s. They spent more than five years studying the internal operations of 15 strategic alliances around the world with the purpose to analyze how firms use competitive collaboration to grow their internal competencies and technologies. Close focus of this study was on Western companies' collaboration with their Asian partners in automotive industry. Regarding knowledge sharing and transfer their findings were that Asian companies are more keen to learn from their Western partners than *vice versa* because the primary motive of Western companies to enter into alliances was avoiding investments into new markets entry, while Asian companies valued learning new skills from their partners. As Westerners had “easy-to-imitate technology” while Asians contributed “difficult-to-unravel strength” related to their cultural background and working mentality, the result was often leading to competitive compromise where one partner got more of the cooperation than the other (Hamel *et al.* 1989).

Most relevant to the context of this work is to describe an example of a study in Information and Communication Technology (ICT) sector. Pellegrin-Boucher *et al.* (2013) conducted a study of coopetitive strategies in Enterprise Resource Planning (ERP) industry for to clarify coopetition typology and stability. Their focus was on the evolution (from the beginning of 1980-s until year 2012) of the ERP industry, in which the value-added chain consisted of five main elements: (1) organizations that supply servers, (2) producers of databases, (3) producers of operational systems, (4) producers of ERP systems and (5) service providers for consultation and integration services. The

respective actors of those elements in the study were: developers of ERP system (dominant actors at the time SAP, Oracle, Microsoft), developers of database systems (dominant actors Oracle, IBM, Microsoft), suppliers of application servers (dominant actors IBM, Oracle, Novell, SAP, Sun) and integrators/suppliers of services (dominant actors IBM, Cap Gemini, Accenture). Results of the survey showed the dynamics of inter-firm relations to be from collaborative partnerships in the 1980-s to coepetitive relationships from 1990-s when big players entered into each other markets. Generally, the survey from Pellegrin-Boucher *et al.* illustrates well, how collaborative relationships became coepetitive and throughout the time and evolution of the market competition got intensified to the extent that sector grew consolidated around leading companies. With the maturity of the market, the collaborative activities decreased, and competitive actions took over with the purpose to develop new technologies. As the negative side-effect of aggressive competition, the technological incompatibility appeared between the market networks of big players. The emergence of new technologies and e-business applications was the driving force to renew cooperation partnerships with the aim to penetrate emerging markets. Market demands for flexible systems with integration capabilities to various applications forced the software producers to collaborate again, especially in developing common technical standards (Pellegrin-Boucher *et al.* 2013).

The author of the thesis concludes that this survey illustrates well the general tendencies of coepetitive relations in knowledge and technology-intensive ICT sector which is the contextual background for the thesis empirical study as it is carried out in the same sector.

**Typologies of coepetition.** In literature about coepetition, there have been several typologies proposed to define the characteristics of coepetition strategy (Yami, NemeH 2014). The author believes that they can be summed up into two dimensions for to classify coepetition. First, the number of actors in a coepetitive relationship: *dyadic* relationship involves two competitors, the *triadic* relationship is among three rivals, and *multiple* relationship has more than three parties (*Ibid*). Scholars Yami and NemeH (2014) explain the importance of relational patterns based on social capital which may be present between actors involved in coepetition. Their approach results from Coleman ideas and they define social capital according to its purpose and effects in three different forms: 1) responsibilities, expectations and reliability-value of social relations; 2) information

channels; 3) rules and sanctions (*Ibid*). The second dimension in classifying coopetition is based on economic activities in the value-chain. Coopetition can occur as *horizontal* or as *vertical* cooperation relationship between competitors (Bengtsson, Kock 1999; Yami, Nemeah 2014). They differ by purpose, dynamics and coopetitive stability - the balance between advantages of cooperation and tensions from competing (Pellegrin-Boucher *et al.* 2013).

*Vertical coopetition* is related to partners having a supplier-customer relationship, and at the same time, they compete before and / or after this cooperation phase. Vertical relations are more visible because they are established on roles in the supply chain which determine the allocation of resources and activities.

In *horizontal coopetition*, the partners cooperate in the general value-added chain by sharing resources and knowledge in the same area of competence, but at the same time, they have a phase where they directly compete with each other. Horizontal relationships are therefore somewhat informal and invisible because they are based on information and social exchanges making the competitors well aware of others movements (Bengtsson, Kock 2000; Pellegrin-Boucher *et al.* 2013).

**Motives for coopetition.** Most common reasons for coopetition are explained with the game-theory and resource-based view from Brandenburger and Nalebuff: firms collaborate with the purpose to increase the size of the “business pie” and then compete in dividing it (Ritala 2012). Their attitudinal approach to competition is well described in the citation: “letting your competitors win too is ok, as long as you win yourself.” (Brandenburger, Nalebuff 1996, referenced by Ritala *et al.* 2014:246) In the context of alliances, the benefits of coopetition arise from alliance partners’ collaboration in mutually increasing the total value, which they can then capture individually (Ritala 2012).

Ritala (2012) points out three different categories for the reasons behind coopetition based on game-theory and resource-based view:

- 1) *market size* –increasing the current market or creating new ones;
- 2) *resources* – use existing resources less or more efficiently in serving current market share;



3) *market share* – protect the captured share and conquer more of the remaining.

One of the purposes for cooperation is to develop new products jointly with competitors by sharing costs and risks. In cooperative relationships with their competitors, companies have increased motivation to take risks related to product development (Zineldin 2004), because the risks are shared with competitors, and thus, cooperation enhances innovation and improvement of technologies. Even giants seek collaboration with their rivals, mainly for additional opportunities, setting technology standards and advancing technological innovation, sharing R&D costs and access to competitor's resources (Gnyawali, Park 2011).

In the context of those motives, collaboration between competitors helps to create incremental or radical innovation regarding product and service development, which is manifested through providing added value (Ritala 2012). According to these factors, firms will decide whether to collaborate with close or far competitors. (Yami, Nemeh 2014)

Ritala (2012) summarizes previous studies about cooperation effect on firms' performance: from the positive side, he points out that cooperation influences positively market performance and innovativeness, as unfavourable results were stated that cooperation is a risky relationship determined by failure, or potentially harmful "learning race" and that it is unfavorable to alliances. All in all, according to him there is evidence that *industry is important* for gaining from cooperation – it is beneficial in knowledge-intensive sectors in the process of creating interoperable solutions and standards, in general R&D and in sharing risks, and it may not be successful strategy in less knowledge-intensive sectors, such as manufacturing (Ritala 2012).

**Cooperation as strategy.** Cooperation strategy can be chosen by competitive companies with a strong market position whose demand for external resources motivates them to collaborate with their competitors. Other factors which opt for cooperative strategy are the urge to improve competitive attractiveness by new products development and efficiency through cost reduction (Pellegrin-Boucher *et al.* 2013). According to cooperation researches summary by Bouncken *et al.* (2015) cooperation as a strategy is

applied in four major strategically essential areas in firms: to gain market power, in innovation processes, in supply chain relations, and global competition.

**Coopetition levels.** According to the literature and previously done analyses of coopetition research by several authors, coopetition can occur at four levels: individual (person) level, intra-firm/organization level, inter-firm level and network level. Most of the research on coopetition as simultaneous cooperation and competition between economic agents have been previously studied in 3 different levels: the inter-firm level, the intra-firm level and the network level (Dorn *et al.* 2016). Much less research has been carried out in individual-level coopetition, and the most researched area is the inter-firm coopetition.

The understanding of “level” in the context of coopetition differs by scholars: one approach is to describe “level” in the context of the number of parties involved in a relationship, e.g. dyadic, triadic, network and intra-org levels of coopetition (Bengtsson, Raza-Ullah 2016). Another, more widely used and better comprehensible approach describes coopetition levels from the firm perspective: individual (personal) level within the firm, intra-firm level, inter-firm level and network level. The author considers this approach to be better and more logical and therefore proceeds from this approach.

*Individual-level coopetition* is related to performance and behavior of a person, and cooperative interactions between people. Bengtsson and Kock (2014) describe the drivers of individual-level coopetition to be career initiatives and personal motives, interaction is done in the mode of community with moral standards. Outcomes are knowledge sharing and success in projects. One of the approaches to describe individual level coopetition is about an individual who has to cooperate in the team, but at the same time is competing with other team members in the scale of individual productivity. It is said to enhance innovation and creativity (Dorn *et al.* 2016).

*Intra-firm coopetition* is most common in big, often globally coordinated multinational companies with several subsidiaries. According to Luo (2005) its principal characteristics are subunits competing for limited corporate resources and support, market expansion and global position in value-chain, knowledge flow, competence excellence and power, and at the same time cooperating in technological (knowledge sharing and innovation),

operational (resources and capabilities), organizational (managerial experience) and financial (intra-corporate financing) areas (*Ibid*). This coopetition level is also described as corporate level by some scholars, and there is also different understanding about the essence of it – one approach classifies coopetition within teams as individual level coopetition another approach holds it as organizational level coopetition.

*Inter-firm coopetition* is associated with cooperation within a supply chain, but also collaboration of firms in the same value chain and industry (Dorn *et al.* 2016). As previously described, inter-organizational coopetition can occur vertically and horizontally from the persepctibve of value chain, and and be presented as supplier-buyer relationships for example.

*Network-level coopetition* occurs within cooperative networks as well as between networks. In network industries coopetition is considered to support interoperability, interworking and common technology base development, and thus it is essential in relations between network members (Ritala, Sainio 2014).

Figure 2 illustrates the coopetition levels with an upside-down pyramid from the perspective of actors involved.



**Figure 2.** Levels of coopetition from the perspective of involved actors.  
Source: Designed by the author based on (Bengtsson, Kock 2014; Dorn *et al.* 2016; Luo 2005; Ritala, Sainio 2014)

Network-level competition is emphasized in the figure 2 with the purpose to indicate the further focus of the thesis in the next sub-chapter.

## **1.2. Advantages and disadvantages, enablers and barriers of coopetition in strategic networks**

This sub-chapter starts by defining the essence of strategic networks shortly. As the in-depth analyses of network theories are not in the focus of the research tasks, then the author delineates the scope of this theses to strategic (knowledge sharing) networks in the context of cooperative relationships and motives for collaboration. The chapter continues with more thorough analyses of the advantages and disadvantages of competition and is followed by an investigation of factors which enable or inhibit the partnership of competitors within inter-firm relations in networks.

**Essence of strategic business networks.** The importance of strategic business networks and alliances cannot be underestimated in nowadays business relationships. Gulati *et al.* (2000) point out that if couple of decades ago the firms' competitive advantage was considered to endeavour from internal resources and capabilities or external industry sources only, and thus a firm being an autonomous entity, then in present time the networks of relationships and collaboration with competitors in strategic networks and alliances create far more value and economic benefits. Håkansson and Ford (2002) describe the networks as a structure of nodes where specific threads relate them. In business, those nodes are business units (e.g., manufacturing and service companies) and thread the relationships between them. Both have their unique knowledge, resources, and comprehension, which connects them in various ways and thus, the network is the outcome of its members' considerations, intentions, and actions. According to the same authors, relationships provide the possibility for companies to manage the technological interdependence with others and the need for more advanced and distinctive offerings (*Ibid*). The definition from Gulati *et al.* (2000) states that the *strategic networks* are inter-organizational stable connections with strategic importance to the firm and can be presented in different forms, such as alliances, joint ventures, but also long-term buyer-supplier cooperation relationships. They provide to the companies several benefits, such

as access to the information, technologies, markets, and resources (*Ibid*). In business networks, the relationships are mostly intended to be with a long-term perspective. Extent of global cooperation ability influences relationship continuity. The indirect drivers for long-lasting business relationships according to Wilson and Nielson are trust between partners and accumulation of strategic advantages (Wilson, Nielson 2000).

**Coopetitive relationships in strategic networks.** Zineldin (2004) describes how coopetitive relationships in strategic networks are an effective way for cooperation as long as it is reasonable in production and organizational cost ways, meaning the costs are less than being alone. Fundamentals of such collaboration are the *belief of win-win approach* – one partners' success does not require others to lose, and cooperation based on such bases is the most efficient way to “create a larger pie and then obtain a bigger slice” (Zineldin 2014:783). Loebecke *et al.* (1999) determine that the critical success factors of coopetitive relationships are managerial leadership and growth of trust. Also, sharing know-how in coopetitive inter-organizational relationships contributes to collective intelligence according to the same scholars. For companies, these relationships provide benefits such as the urge to innovate due to competition and access to new resources due to collaboration (*Ibid*).

Yami and Nemeh (2014) who did coopetition and innovation research in the wireless telecommunication sector in Europe, concluded that in the knowledge- and technology-intensive industries such as ICT, the participation of more competitors in coopetitive strategic networks reduces for each member the risks and costs they would individually bear. Also, involvement in network gives assurance about the development trajectory of technology and higher potential of value creation and differentiation for each partner (Yami, Nemeh 2014). Another study from ICT sector confirmed as well that strategic coopetitive alliances among rivals in the industry support the imposing of specific technological standards and provide to end-users “a portfolio of technologically-compatible products” (Pellegrin-Boucher *et al.* 2013:75).

Gulati *et al.* (2000) highlight the importance of strategic networks by saying, the networks bring to companies economic benefits through learning and access to new markets, resources, information, technologies as well as advantages in accomplishing strategic goals by sharing risks and optimizing value-chain. As a shadow side of networks, these

scholars point out the opportunity to be locked into ineffective relationships or even be excluded from partnerships with other viable companies (Gulati *et al.* 2000).

The previously mentioned study in ICT technologies sector pointed out the strong motives for cooperative collaboration in networks by listing among others such reasons as globalisation, growing competition, convergences in ICT technologies, unification of international standards, risks and volatility of market evolution which all drive ICT companies toward participation in cooperative networks and agreements (Pellegrin-Boucher *et al.* 2013)

Regarding knowledge networks, which are created for the purpose of knowledge and expertise exchange, Ilvonen and Vuori (2013) describe their most significant benefits for companies to be the creation of new knowledge in collaboration with network partners, gaining information and know-how from the network and exchange of knowledge among network partners (Ilvonen, Vuori 2013).

Clusters can be listed as well as one type of knowledge networks, which according to Ketchen *et al.* (2004) are tied to specific region by bringing together companies involved in a particular industry or sector. They involve different kind of partners like direct competitors, universities, suppliers and other linked entities. Main benefits of clustering are the information sharing between the involved parties, creating common frameworks and enhancing performance through knowledge transfer (Ketchen *et al.* 2004).

**Advantages of co-competition.** As it can be deduced from above, co-competition has several advantages. In general, co-competition enables for companies to stimulate the research and development of existing and new products/services, increase the sales, reduce costs, vary the product/service portfolio and keep their customers satisfied (Pellegrin-Boucher *et al.* 2013). Co-competition presents several *economic benefits* such as cost reduction and enhancing return. Strategic cooperative networks create trust between their members in different levels due to mutual awareness and reputation which leads to *decrease in transaction costs and a potential increase in returns* within that particular relationship (Gulati *et al.* 2000). This leads to *new value for partners* with reduction of transaction costs and lowering the risks related to joint investments or purchases (Zineldin 2004). Economic advantages are also encouraged and new value to the company created by

diminishing the uncertainty and risks (both financial and practical) in the purchase and joint investments. For partners in cooperative alliance or network, the described benefits result in economies of scale, lowered costs and enhanced profits, but also in the certainty about technology development path (Yami,Nemeh 2014; Zineldin 2004).

Coopetitive business model enables the competitors to create *new sales opportunities* by collaboratively enlarging the size of their existing business markets through sharing the complementary resources and costs of market expansion (Ritala *et al.* 2014). Strategic cooperation with competitors in business networks can give *competitive advantage* through having access to wide range of information about cooperation partners regarding their joint efforts, plans and collective needs, which shape or influence the competitive market in the big picture (Zineldin 2004). Strategic cooperation provides to companies an opportunity to *strengthen their competitive position* by differentiating their offerings with added value which is generated from the collaboration and utilization of shared resources with competitors in alliances (Ritala 2012; Ritala *et al.* 2014). As cooperative firms potentially create jointly *more value to the customers*, it will result in *increased customer satisfaction*. Especially in terms of innovation outcomes, when the firms in the same industry integrate their similar and complementary resources (Ritala, Sainio 2014) and provide added value to customers through their interoperable and compatible offerings (Ritala 2012).

Competitors create jointly *access to new markets* when joining forces by commonly sharing their complementary resources and providing broad-based, unified platforms and offerings to customers related to information technology. This was the finding of Amazon.com case study, where jointly created new markets presented value capture potential to participating firms through differentiating individual offerings (Ritala *et al.* 2014). Ritala with other scholars made a research with Amazon.com, where the cooperative business models with different vendors and cooperation partners were explored. When doing cooperation with rivals and upgrading its capabilities due to collaboration, the company can enhance its *public image and reputation* by promoting its brand and technologies (Ritala *et al.* 2014). That advancement makes the collaborative companies stand out as leading and innovative enterprises in their sector. In addition to public acknowledgment, Gulati *et al.* (2000) emphasize the importance of internal

reputation within the network which is based on inter-firm trust and enables not only to reduce transaction costs but also to improve the coordination between the companies within alliances (Gulati *et al.* 2000). Compared to cooperative or competitive only strategy, the coepetitive strategy has a greater contributory factor to achieve innovative results.

Coopetition helps competitors to conjointly *create new markets* by investing cooperatively into innovations. Later on, the collective efforts enable *to educate the market* and deliver greater awareness about jointly created innovations, its benefits, functions, and usage (Ritala 2012; Ritala, Sainio, 2014). A positive effect has also been proven of the coopetition *influence on industry dynamics and technologies*, where coopetition is considered to be especially beneficial in industries where there are only a few major players (Ritala, 2012). In several studies, it was found that coopetition of major market participants' influences industry dynamics by collaboratively promoting specific technologies and making common efforts in improving technical standards and enhancing new technologies (Anderssson *et al.* 2013; Koch 2017). According to Ritala and Hurmelinna-Laukkanen (2009), a collaboration between competitors enlarges the *positive network externalities* because coopetition contributes to establishing new and bigger markets sooner, and jointly developed compatibility enables to provide more significant value to the (potential) end customers. So, it can be concluded that positive network effect and interoperable systems increase the speed of diffusion and capturing profits (Ritala, Hurmelinna-Laukkanen 2009; Ritala 2012).

**Disadvantages of coopetition.** Even though there are many advantages and coopetition is generally considered as a positive phenomenon, it also has its shadow sides. The most significant disadvantage of coopetition according to several scholars, is the threat of *opportunistic behavior* by cooperation partner (Bouncken *et al.* 2013; Luo 2007). Zineldin (2004) describes how one of the collaboration partners can take advantage of its power (which can be technical, financial, emotional or even political) over the other and forces the other partner(s) to act on its one-sided benefits (Zineldin 2004; Osarenkhoe 2010). As a result of such approach the coepetitive agreements can therefore have the hidden agenda - advantages are unbalanced for the interests of one party only and are often so with a hidden purpose (Hamel *et al.* 1989; Pellegrin-Boucher *et al.* 2013). As



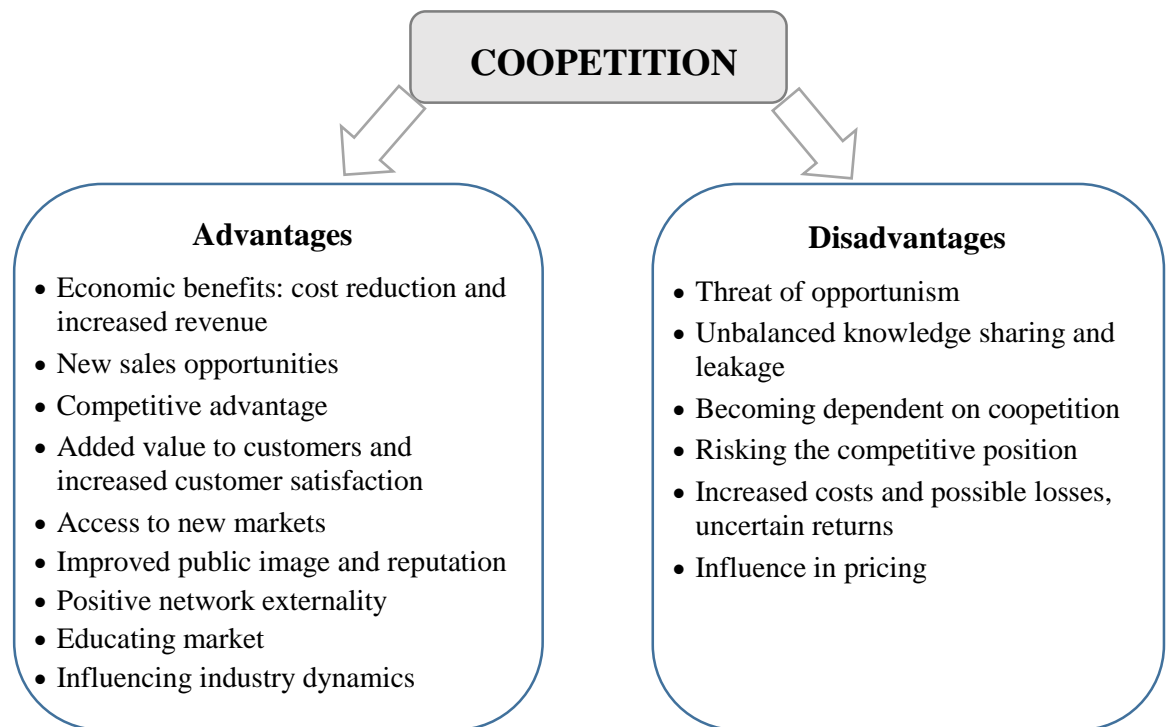
coopetition offers access to competitor's resources and competencies, there is also the possibility to abuse the gained knowledge (Hamel *et al.* 1989). Opportunism becomes present in the matured markets, where competition is intensified, and market players seek opportunities to outplay other rivals. This is the situation where cooperative relationships formed for collaboration will suffer from opportunistic behavior. Coopetition is used with an opportunistic approach to gain knowledge and control over a competitor and then used for to weaken the rival in direct market conflicts. (Pellegrin-Boucher *et al.* 2013). Cooperation with a direct competitor is therefore dangerous. Especially in the historically longer relationships, there may be a temptation to use the capabilities and resources originating from collaboration and take advantage of the partnership, by one partner strengthening its market advantage on the expense of the other (Pellegrin-Boucher *et al.* 2013). Apart from misuse of power, another form of opportunism is using the knowledge and expertise absorbed from a partner which initially was shared for collaboration purposes only, for its own purposes and benefits (Bouncken, Kraus 2013).

Another disadvantage of coopetition emphasized by several scholars is *imbalanced knowledge sharing* which can lead to the extent of *knowledge leakage* (Ritala, *et al.* 2009). Gaining access to partners' knowledge and resources is accompanied by the risk of one partner sharing more strategic resources and expertise than it gains value in return. This kind of imbalance can create inter-organizational tensions within alliances and uncertainty (Pellegrin-Boucher *et al.* 2013). Hamel *et al.* (1989) describe how formal terms of collaboration do not cover full extent into what the knowledge and expertise are shared – in social interactions between working groups during the day to day operations lies the biggest risk of unintended knowledge and skills transfer. Therefore they point out the importance of company policies made known to all employees about what skills and technologies cannot be shared and are considered confidential for partners and monitoring what information is handed out (Hamel *et al.* 1989). When speaking of disadvantages of cooperative partnerships, there cannot be overlooked the paradox that all knowledge shared for collaboration can be taken advantage of and used for competition (Loebecke *et al.* 1999). In the context of these issues, scholars suggest that cooperative networks propose an opportunity to absorb the knowledge from partners without transferring their strategic expertise to the partners and still ensure its competitive advantage (Hamel, *et al.* 1989; Ritala, Hurmelinna-Laukkanen 2009). Regarding knowledge sharing and

innovation, there is another disadvantage according to Luo (2007) which may occur in cooperative partnerships: “habitually cooperative” firms may miss their competitive innovation over time and *become dependent* on other firms as well as the cooperative relations. This *endangers their competitive position*, especially after collaboration with other partners end (Luo 2007).

Coopetition can create the partners *increased costs and losses* instead of revenues and returns on investment. Participation in cooperative projects may require adjustments from the partners, which take time, are financially costly and may never bring the required return (Osarenkhoe 2010). Those needed adaptations which require investments, but are uncertain on return, can be technological, economic, cultural, psychological or administrative (Zineldin 2004). Cooperative collaboration may *influence pricing policies*. Direct price pressure as a result of cooperation was not mentioned nor proven by scholars, but there were described indirect influences. Mira *et al.* (2015) in their survey about product commercial performance made a finding that horizontal cooperation had a negative effect on the end customers bargaining power for the benefit of companies in the cooperative partnership. Markendahl (2011) based on the survey of mobile network operators’ cooperation made the conclusion, how price directly influences user behavior but cooperative agreements did not influence end-user pricing as the mobile broadband prices were already low enough. Even though the author of the thesis did not find proof of cooperation negative influence on pricing, the matter is still listed here under the disadvantages as a possibility to occur in specific industries and contexts.

For conclusion, when disadvantages of cooperation in the form of opportunistic behaviour, knowledge leakage and coordination costs become greater than the benefits of collaboration and thus the value creation potential is lower than the probability of imitation and losing competitive advantage, the fewer companies want to get involved in cooperative alliances and networks (Yami, Neme 2014). The advantages and disadvantages provided by cooperative strategies within inter-firm relations in networks are summarized in the figure 3.



**Figure 3.** Advantages and disadvantages of competition.

Source: created by the author based on (Anderssson et al. 2013; Bouncken *et al.* 2013; Gulati *et al.* 2000; Hamel *et al.*, 1989; Koch 2017; Loebecke et al., 1999; Luo 2007; Mira *et al.* 2015; Pellegrin-Boucher *et al.* 2013; Ritala *et al.* 2009; Ritala 2012; Ritala *et al.* 2012; Ritala *et al.*2014; Ritala, Sainio 2014; Osarenkhoe 2010; Pellegrin-Boucher *et al.* 2013; Yami, Nemeah 2014; Zineldin 2004)

The next section will describe the enablers and barriers of cooperative business relationships in inter-firm relations within strategic networks.

**Enablers of coopetition.** *Sharing knowledge, learning from partners and combining competencies* for collaborative product/service development are one of the primary motives in coopetition (Hamel *et al.* 1989; Zineldin 2004; Bouncken, Kraus 2013). Through cooperative agreements firms improve their possibilities for knowledge creation and absorption. Alliances enable the cooperation partners to have access to each other's capabilities and superior technologies. This results in building new skills and spreading the new knowledge inside their own organizations (Hamel *et al.* 1989; Zineldin 2004). Hamel *et al.* presume it is not cunning to use alliance with competitors for gaining new technologies or skills. They state that it is rather a positive evidence of firms' commitment and learning ability to absorb new skills from competitor. However, they argue also that in knowledge sharing the technologies are easier transferable as they are more

determinate than process competencies which are diffused throughout the company. Therefore, they also recommend to set limitations to the cooperative agreements with the purpose to limit partner access to strategically important knowledge and technology (Hamel *et al.* 1989). In conclusion, companies involved in cooperation have the chance to learn from cooperation partners' their expertise and skills while at the same time still assuring their own competitive advantage and core competence. This kind of strategic balancing of cooperation and competition enables to strengthen the firms' position in the market and gain advantages (Rudny 2015).

Another important enabler of cooperation is *openness*. Misuraca *et al.* (2011) determine three value drivers in the context of interoperability governance which apply well as cooperation enablers in cooperative networks: efficiency in performance, openness defined as access to information, accountability and consensus orientation; and inclusion in the meaning of incorporating resources and inclusiveness (*Ibid*). Zineldin summarizes following aspects as criteria for cooperative relationships: general willingness for interactive exchange by the parties, having "something of value" which is desirable to other, willingness to exchange this "something of value" for to achieve mutual benefit, freedom to choose the terms of exchange by leaving them better off (or not worse off), ability to openly communicate with each other, acceptance of common values, norms and perceived responsibility for commitment for development of long-term relationship, and finding balance in the relationship (Zineldin 2004). Important aspect of openness is trust between the partners within the cooperative relationships, which is required for long-term cooperation and partnership and must be earned through cooperative trust-creating acts over time. Together with moral and ethical standards, and patience it builds a solid foundation for long-term benefits (Wilson, Nielson 2000; Zineldin 2004).

Joint *value creation* in collaboration with competitors is considered a strong motivator of cooperative network relationships. Ritala (2012) based on previous studies is stating that value creation in alliances depends on joining and utilizing useful resources which become available through inter-firm partnerships. Creating new values conjointly with cooperation partners helps to achieve synergy effects (Zineldin 2004). Ritala, Golnam and Wegman (2014) researched cooperation based business models in the case study of Amazon.com and they concluded that the main drivers in joint collaborative value

creation are compatibility, interoperability and common utilization of similar and supplementary resources.

Coopetitive networks are (indirectly) encouraging companies for *internal innovation* by providing the opportunities to gain access to competitor's technology and know-how. The gained information and knowledge may stimulate companies to make improvements and new inventions in their own technology base and processes, as well as redesign their business models. Hamel *et al.* (1989) describe how benchmarks to partner's performance can provoke the revisal of internal processes, performance and even business models. Another stimulus for innovations are joint collaboration projects for to improve current solutions regarding products and services, or to create totally new ones with shared resources and expertise for to respond to market demand (Koch 2017:48; Resende *et al.* 2018; Ritala 2012;). A substantial enabler of coopetition and participation in industry networks is the purpose of *improving common standards* and *promoting certain technologies* in collaboration (Andersson *et al.* 2013; Koch 2017). This is the case especially in technology-intensive sectors where there are several standards around and in which cases the collaboration helps to improve general compatibility, interoperability and create joint value for all parties. As Andersson *et al.* (2013) stated: service innovations based on converging technologies are created within coopetitive collaborations.

**Barriers of coopetition.** One of the major barriers between companies who participate in coopetitive networks are *differences in business models and pricing policies*. Ritala and Sainio (2014) summarize that business model is not only about an individual company, but it actually reflects how the external stakeholder's interests are connected to the organization and how its economic exchanges are coordinated between them with the purpose to create value to customers. Differences in business models and value capture reflected to pricing, can therefore create a serious obstacle in collaboration with competitors, especially in international markets.

*Barriers related to interoperability.* As the empirical part of the thesis focuses on interoperability coopetition, the author analyzed also literature related to interoperability challenges. By definition, interoperability means the technical compatibility in terms of

computer systems or software being capable of exchange and make use of data.<sup>3</sup> Interoperability is needed by competitors to cooperate in the value creation and distribution and there are several motivators for companies to create and control their interoperability strategy for to develop the capabilities to interoperate (Guédria *et al.* 2014).

The scope of interoperability contains three aspects (Kubicek, Cimander 2009; Misuraca *et al.* 2011):

- 1) Technological interoperability is about connectivity, protocols and common syntax for data, as well as standards for exchanging messages;
- 2) Semantic interoperability involves the exchanged message content regarding data structure and interpretation;
- 3) Organisational interoperability concerns processes, legislation, contracts.

Each of these three aspects could be a barrier to interoperability cooperation on their own or conjointly. Achieving interoperability in all three levels takes great effort from cooperation partners and are therefore supported by standards (such as ISO 14258 ) (Guédria *et al.* 2014), and generally acknowledged industry-specific frameworks (for example The New European Interoperability Framework<sup>4</sup>). When two first levels of interoperability are more related to technological compatibility, then organizational barriers in the network level cooperation context concerns openness in information exchange, ability to collaborate for to perform cooperative tasks and implement best practices (Misuraca *et al.* 2013). It occurs unfortunately that some partners in cooperative partnerships lack motivation and interest to do so.

One more barrier, somehow related to previously described organizational shortcomings in cooperation is the *high coordination costs* which occurs when communication regarding legal and technical interoperability takes too long and much effort in terms of resources (Misuraca *et al.* 2013). Zineldin (2004) points out from another angle the same issue: cooperation strategy may bring too many costs in coordinating, controlling enhancing the relationship(s), in addition there needs to be time and resources devoted for to learn about partners (Zineldin 2004).

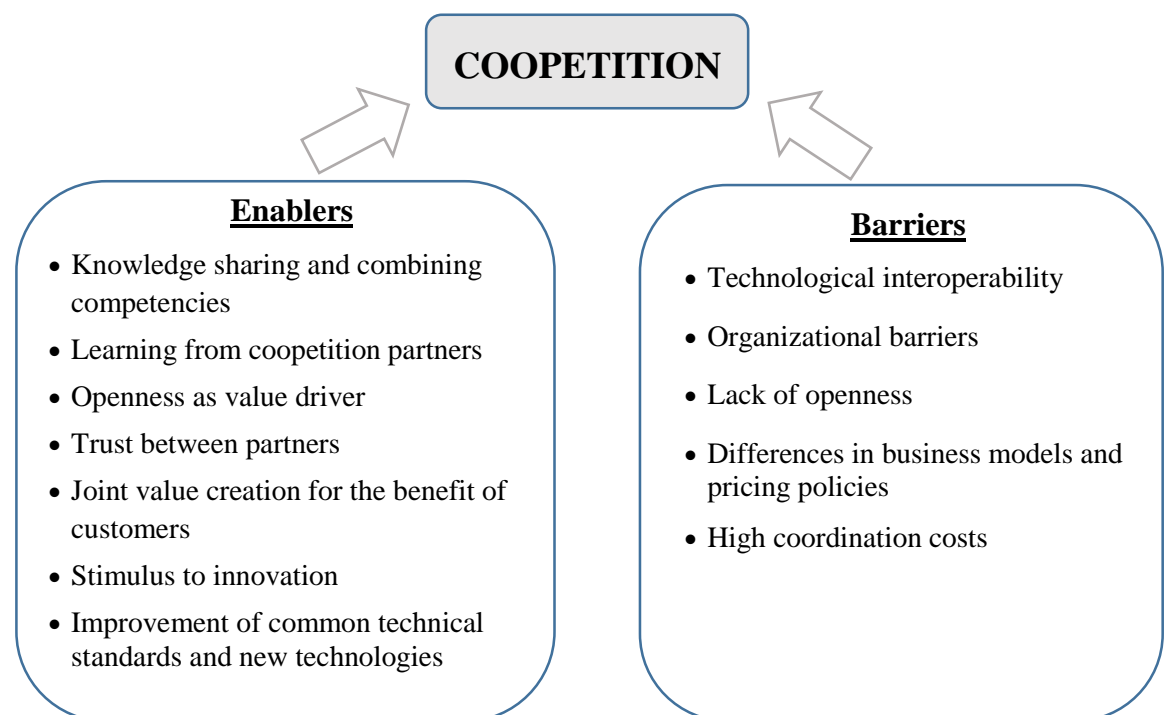
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<sup>3</sup> Authors explanation based on English Oxford Living Dictionaries: <https://en.oxforddictionaries.com/definition/interoperability>

<sup>4</sup> Provided by European Commission: [https://ec.europa.eu/isa2/eif\\_en](https://ec.europa.eu/isa2/eif_en)

An enabler of technological incompatibility and thus barrier to interoperability cooperation is the opportunistic *exploitation of network effect* which occurs in the situations, when technological leaders and / or companies with big market power and market share decide to take advantage of their own market networks by deliberately reducing interoperability collaborations and participation in sectorial associations (Pellegrin-Boucher *et al.* 2013).

Another barrier, the *lack of trust* has been considered as one of the major impediments in coopetitive relationships. Implication of trust is the belief in other party being reliable, acting with integrity and having certain qualities such as responsibility, competence and benevolence (Zineldin 2004). Enablers and barriers what influence coopetition in strategic knowledge networks are summarized in the figure 4.

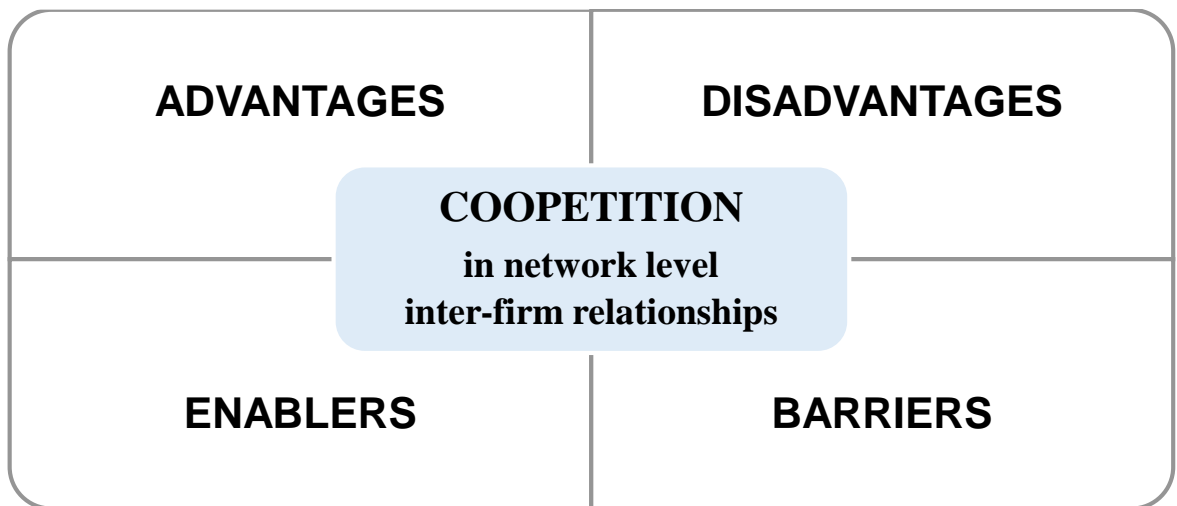


**Figure 4.** Enablers and barriers that influence the inter-firm coopetition in network level. Source: created by the author based on (Andersson *et al.* 2013; Bouncken, Kraus 2013; Guédria *et al.* 2014; Hamel *et al.* 1989; Koch 2017; Kubicek, Cimander 2009; Misuraca *et al.* 2011; Ritala 2012; Ritala *et al.* 2014; Wilson, Nielson 2000; Zineldin 2004)

The first chapter of the master thesis focused on theory review: after defining the coopetition phenomenon, describing its' essence and formation from game-theoretical background into business strategy, the author explained typology of coopetition based on

number of participants in the coopetitive relationship and levels of coopetition from the perspective of involved actors.

The next section focused on inter-firm coopetition in network level by first briefly describing the meaning of network and the coopetitive inter-firm relationships in the context of this thesis. It was followed by analyses about advantages and disadvantages of coopetition between competitors in networks and what are the motives and barriers for coopetitive business relationships. As a result, the four-corner model was implemented – see figure 5 below, which will be used by the author as the bases of the empirical study described in the next chapter.



**Figure 5.** Conceptual model of the thesis for analyses of the theoretical views in empirical study.

Source: created by the author.

The conceptual model of this thesis is to analyse with theoretical and empirical study the four aspects of coopetition within network level inter-firm relationships: advantages, disadvantages, enablers and barriers of coopetition.



## **2. COOPETITION MOTIVATORS AND BARRIERS IN EUROPEAN E-INVOICE SERVICE PROVIDERS INTEROPERABILITY**

### **2.1. Introduction of Electronic Data Interchange (EDI) coopetition, empirical study methodology and sample selection**

Empirical part of the thesis is focusing on coopetition research among European E-Invoicing Service Providers Association (EESPA) members. The chapter starts by introducing the business context of electronic data interchange (EDI), the role of service providers and EESPA. It is followed by research method and process description, empirical survey reference to the theory and introduction of survey logic and content. The second section of the empirical chapter is focusing on thorough analyses of survey results based on the implemented four-corner model of the thesis.

**Electronic Data Interchange (EDI)** is defined as the automated transfer of electronic messages in structured format between computer systems without the need for human intervention (Nienhuis, Bryant 2010). An EDI message is in computer readable format, structured according to the agreed standard and capable of being automatically processed (Veersoo, 2016). By “computer systems” is most commonly meant enterprise resource planning (ERP) systems which are computer platforms and software designed to support and automate different business processes of an enterprise like management of finances, human resources, supply chain, warehousing, manufacturing, customer relationships, purchase, sales and other relevant processes. Historically, the most commonly exchanged EDI messages are related to transactions in supply chain processes – sales, purchase, and

logistics documents of goods, like orders, invoices, dispatch advices, shipment notifications and many others.

EDI messages are transmitted nowadays mainly via internet, but in earlier days also phone lines were used for transmission. EDI and e-invoice operators are *value-added network* (VAN) providers, whose role is to be the intermediary in providing secure data transmission services between business partners. The value-added communication services include EDI message translation as different computer systems have their own “language” as well as different value-added services related to EDI. Thus, today's EDI operators are VAN service providers mainly with the emphasis on specific industry processes, especially in retail, distribution, logistics, but also in manufacturing. It is important to note, that EDI service providers are private enterprises and not state-controlled (TrueCommerce ... 2018).

**Role of service providers.** According to Billentis 2017 report (Koch 2017:33), there are more than 10 000 different accounting solutions and Enterprise Resource Planning (ERP) systems in Europe alone, and much more in the world. They all “speak a different language”. The Electronic Data Interchange (EDI) and e-invoice operators and service providers are needed for to translate, process, and transmit those electronic documents carrying the business data between trade partners. Each service provider has its own value-added network within what the document interchange between trade partners (buyers and sellers) is happening. As EDI and e-invoice operators’ business model relies on their network size, the network density is a critical success factor. Value of electronic document exchange will increase to all parties the more that each customer exchanges electronic documents with more partners. Interoperability of EDI and e-invoicing operators enable the customers in different operators’ networks to exchange e-invoices and other EDI documents in the supply chain (mainly electronic orders, dispatch advises, invoices and other business documents for goods movement).

**Sample selection.** Empirical research of the thesis is focusing on cooperation research among European E-Invoicing Service Providers Association (EESPA) members. The association assembles together European leading service providers in the sector. The author decided to conduct the empirical study in collaboration with EESPA among its’ members because she believes that the group of companies participating in the

association represents the sector rather good both from geographic distribution as well as characteristics of the companies by involving enterprises in different sizes and scope of business areas in Electronic Data Interchange (EDI) sector.

EESPA was established in 2011 as an international non-profit association and acts as a trade association on European level for a community of e-invoicing service providers. It has over 70 members, and its' main focuses are improving the widespread adoption of e-invoicing, creation of an interoperable eco-system for it, helping to set public policies and solve compliance issues. Its' headquarter is located in Brussels, Belgium. Members of EESPA are organizations who provide value-added network, business outsourcing, financial, technology, and EDI (electronic data interchange) services. Full members list of EESPA is added to Appendix 1, indicating also the overview of the members' business areas. Majority of the member companies are from the countries of EU, but there are also organizations from American continent among the members. Most of the companies have operations in more than one country which means they operate on international level. Apart from companies whose core business is IT technologies and solutions related, there are also banks and finance associations among the members.

Over 500 million e-invoices in 2016 were delivered between EESPA community service providers with the growth rate of 36.5% in B2B/B2G and 47.3% in the B2C segment compared to previous year. Increase in e-invoice volumes is expected to continue. EESPA supports it by several activities like providing interoperability agreement drafts and sharing of best practices. This facilitates the on-boarding of thousands of new end-users and increase of exchanged electronic documents volume<sup>5</sup>.

Coopetition between e-invoice service providers happens on several levels: service providers cooperate on national (state) level by promoting e-invoice benefits to end-users, by discussions and lobby work on government level for to achieve state and legislation support, and by proposals, discussions, and agreements on national technical standards - this all happens through sector clusters and associations. Operators among themselves cooperate by creating interoperability on a technical level (data interchange channels, common agreed standards, and formats) and on a business level by signing

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<sup>5</sup> Referenced from: <https://eespa.eu/>

interoperability agreement for regulating service parameters. Common principle between operators is “bill-and-keep” where each service provider bills its own customers, service providers cover their own costs and don’t bill each other. An important aspect of the cooperation is open communication and information sharing. Through previously described activities, operators’ collaboration creates a bigger market for all e-invoice service providers. At the same time, there is still going on competition for the share of that jointly created bigger market. Competitive advantages are often achieved by service package design, value-added services and interoperability capabilities.

Apart from national cooperation, there is similar cooperation going on in an international level with the purpose to provide electronic document exchange services to multinational customers or to end-users whose trade partners are in another country. Because many service providers in other countries operate on national technical standards and proprietary e-document formats, there are common interoperability agreements needed both, on technical and business level.

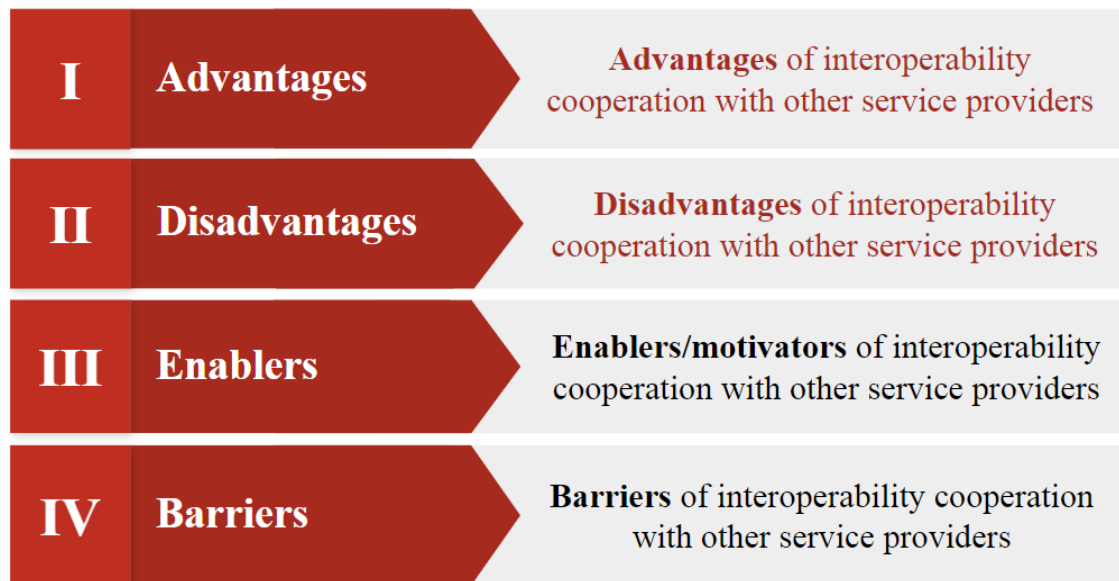
For the empirical study, the method of online questionnaires was chosen. Screenshots from the electronic form can be found from Appendix 2. There are two reasons for choosing the quantitative survey method. First is the geographical reason – the online survey has the best possibility to reach out to more companies in different geographical regions continent-wide. The second reason was the requirement of confidentiality and non-disclosure by EESPA secretariat who did not allow direct contact with its members regarding the survey. There was the Non-Disclosure Agreement (NDA) signed between the author and association before the Secretariat sent out the questionnaire to its members. Initially, before the agreement with EESPA, the author had a plan for to conduct a couple of interviews as well for to ask additional questions and clarify the answers of the electronic questionnaire. But since the information obtained from the questionnaire was sufficiently comprehensive, the interviews were not reasonable. The decisive factor in the waiver of interviews was that the participants in the survey provided very thorough answers to textboxes, in which they could express opinions and evaluate the views of the questionnaire. These questions were voluntary, and it was very positive that so much open feedback was given. Additional interviews would have been justified if the respondents did not provide in-depth feedback on free-text fields in which their additional views were

asked. These views are presented in the tables of citations in analyses chapter grouped by topics in the analyses.

The profoundly described research process is added to the Appendix 3 and research proposal to EESPA to Appendix 4. For to summarize, general milestones and stages in the empirical study were as follows:

- (1) research idea was presented to EESPA executive committee member – October 2017;
- (2) the written research proposal (see Appendix 4) was presented to EESPA executive committee – November 2017;
- (3) analyses and systematization of the theoretical background literature about competition – January - February 2018:
- (4) the electronic questionnaire was created and tested on two people – February 2018;
- (5) an electronic questionnaire was presented to EESPA secretariat, and a Non-Disclosure Agreement for survey results was signed – March 2018;
- (6) conducting the electronic survey – April 2018;
- (7) analyses of the electronic survey results, writing conclusions – May 2018.

The questionnaire (see Appendix 1) was created based on theoretical literature and authors' industry knowledge gathered within 4 and half years of experience as a partner relations manager by the Baltics biggest EDI and e-invoice service provider, and managing several international interoperability cooperation projects. In accordance with the theories written above in first chapter about cooperation advantages, disadvantages, enablers and barriers, the author implemented the same logic into the structure of questionnaire by converting the four topics grounded on theory into four aspects of interoperability cooperation between e-invoice service providers (see figure 6 below): advantages and disadvantages – related rather to external factors from company perspective (market, customers, competitors, external communication and relations); motivators and barriers – seen rather as internal factors (capabilities, know-how, internal motives). The author considered the term “coopetition” from scientific literature as a synonym to “interoperability cooperation” for to make it better comprehensible to the audiences outside academic field.



**Figure 6.** Findings from theory for empirical study created by the author.

Also, there were questions in the questionnaire initiated by EESPA about its services and community support, which are not analyzed in this thesis. Author's goal was to investigate, which factors are considered the main motivators and enablers of interoperability cooperation and what was considered the biggest barriers among the companies who are the members of EESPA.

The questionnaire was tested in two stages: first, the initial testing was done by EESPA executive committee member for to evaluate questions content, types and also technical platform (Google Forms) of the questionnaire. As a result, the author chose more professional and capable platform (QuestionPro) for the survey. Content of the questions was also evaluated and some contributions made by a colleague of the author on a member of the council and chief technology officer position. The second testing was done by the secretariat of EESPA consisting of two members. They gave thorough feedback to the author both, on content and format of questionnaire: major restructuring of the survey was required together with some content and wording changes. A significant change was related to the fact, that barriers and disadvantages of interoperability cooperation between service providers was a sensitive topic and had a negative shade rather. It was required to shorten and combine these two sections into the middle of questionnaire so that last section, enablers, and motives would end the survey in a rather positive tone. Another important matter which needs to be highlighted was the confidentiality request for study:

by the association, it was strongly required that the survey must be carried out in an impersonalized way so that respondents remain confidential because of the of data protection responsibility by EESPA. As a result, all the background questions for respondents' demographic information had to be removed so that the respondents could not be identified.

Majority of questions were presented as statements in matrix grids on the Likert 5-grade scale because the grid type of questions enables to receive responses to similar statements about the same matter at once and they also save space (Saunders *et al.* 2009: 383-384). The advantage of Likert scale is that it allows measuring degrees of opinions on a particular topic. The survey included a couple of ranking questions with the drag-and-drop method in the middle and second half of the questionnaire for the respondents not to get bored and loose attention. In those questions, they were asked to compare statements and rank them in the order of preference. Each section also contained the free text optional question for further views and opinions from the respondent. The reason for such question type was the purpose to gain more insights into the particular topic and to find out if any matters were pointed out in the context of particular topic which the author didn't know to refer to.

The first section of the questionnaire was focusing on background information: if companies have operations in more than one country, if and how many interoperability agreements they already have, how competitive they considered themselves to be with other service providers and some additional industry-specific information. Role of the background questions in the survey is described in table 1 below.

**Table 1.** Roles of the background questions

<b>The question in the questionnaire</b>	<b>The purpose in the survey</b>
1.1. Do you have operations in more than one country?	The key question to assess the company's size and internationality
1.2. Do you have customers in more than one country?	The key question to assess the company's need for interoperability agreements
1.3. How many interoperability cooperation agreements with other e-invoicing service providers does your company currently have?	The key question for evaluating the topicality of interoperability matters
1.4. What is the main motive for your company to start interoperability cooperation and projects?	The key question regarding cooperation motives
1.5. Does your company use interoperability agreements mainly for serving your supplier customers or buyer customers or both?	Industry-specific question, not analyzed in the scope of this thesis
1.6. How competitive are you with e-invoice service providers, with which you interoperate?	The key question about competitiveness with interoperability partners.
1.7. Does your company exchange other electronic business documents under interoperability agreements apart from e-invoices?	Industry-specific question for characterizing the scope of the company activities
1.8. Which are the most widely used electronic document standards used by your company?	Industry-specific question, not analyzed in the scope of this thesis
1.9. How would you rate the maturity of your technical interoperability channels on a scale of 1 - 5? Where 1 =custom developments needed for every new channel and 5 = reusable protocol and channel setups are optimized ("plug and play")	Industry-specific question, not analyzed in the scope of this thesis
1.10. Is your company a PEPPOL access point?	Industry-specific question, not analyzed in the scope of this thesis

Source: created by the author

The second section consisted of statements presented in matrix form regarding company's experience about interoperability cooperation advantages to be answered in 5-point Likert scale with the answers range from 1 (strongly disagree) to 5 (strongly agree).

The third section was about disadvantages and barriers to interoperability cooperation. Disadvantages were presented in the matrix question as a set of statements from the company's perspective to be answered as well in 5-point Likert scale with the answers range from 1 (strongly disagree) to 5 (strongly agree). There was also the option "Not applicable" (N/A) added in accordance with the wish from EESPA. In the analysis, these answers had the value of zero and were removed from the analysis. For researching interoperability cooperation barriers, there were questions with two answer types. First, the respondent had to rank in the order of importance the possible barriers and second, there was a matrix question with a set of statements describing company's experience in



the 5-point Likert scale where 1 stated “not a barrier” and 5 “very high barrier”. There was the option N/A added as well. Different values in wording to the Likert scale regarding the level of the barrier were given for to make answering relatable to the experiences and achieve greater accuracy.

The fourth section was the longest by containing the statements about motivators and enablers of interoperability cooperation, as well as knowledge sharing and innovation resulting from cooperation. Into this section were also added the questions regarding the influence of EESPA and cooperation support provided by them. For the statements, there were used a 5-point Likert scale similar to the second section and also ranking of statements with the similar logic as in section 3.

QuestionPro platform provided the respondents geographic distribution by countries based on respondents IP address location. As this information reflected the location of the particular respondent on the moment of answering the survey which is not guaranteed to be the location of the company whom the respondent represented, then this information was just kept informative and this data was not included into further analyses (see illustrative picture in figure 7). The further analyses and calculations were done by the author with the help of spreadsheet program Excel.

Table 2 below explains how the four topics discussed in the theoretical part are reflected in the survey questionnaire as statements to be evaluated on the Likert scale or ranked by the respondent in the order of priority.

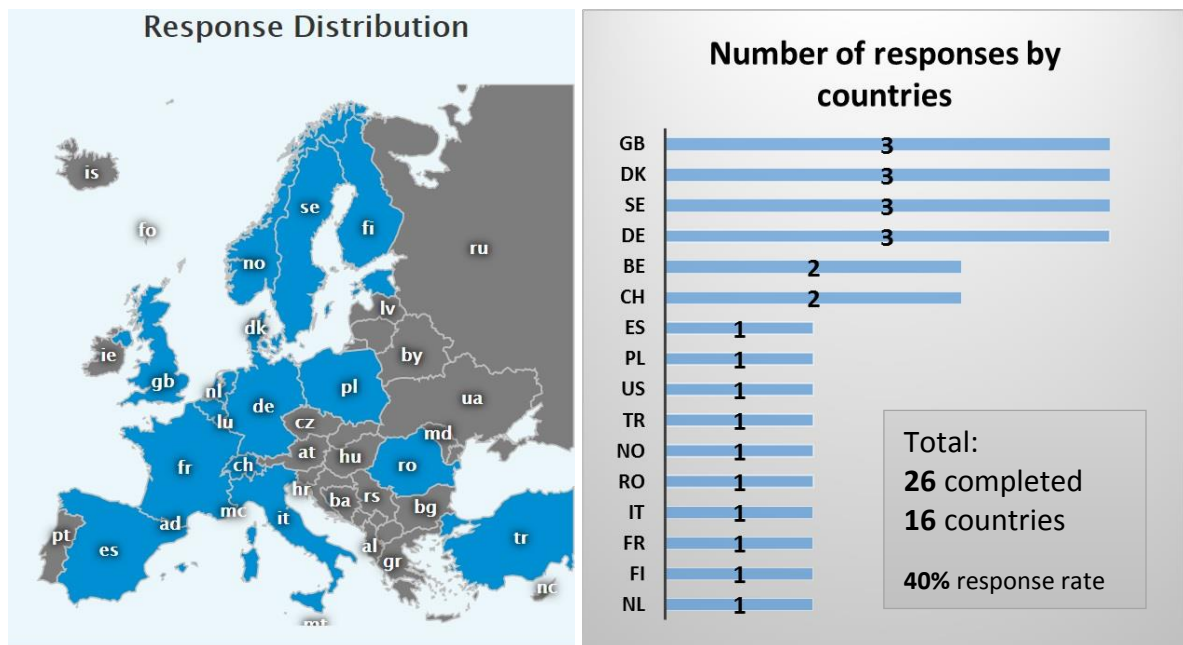
**Table 2.** The survey questions reference to the theory.

Reference to the theory	Question/statement in the survey
<b>I Topic: Advantages of cooperation</b>	<b>1. Advantages of interoperability cooperation with other service providers</b>
<ol style="list-style-type: none"> <li>1. Economic benefits due to cost reduction and enhancing return (Gulati <i>et al.</i> 2000; Yami, Nemeah 2014; Zineldin 2004)</li> <li>2. New sales opportunities by collaboratively enlarging the size of existing market (Ritala <i>et al.</i> 2014)</li> <li>3. Competitive advantage: improvement in the firm's competitive position through cooperative alliances (Ritala 2012) and access to more information (Zineldin 2004)</li> <li>4. Added value to customers and thus increased customer satisfaction (Ritala 2012; Ritala, Sainio, 2014)</li> <li>5. Access to new markets (Ritala 2012; Ritala <i>et al.</i>, 2014; Zineldin 2004)</li> <li>6. Improves company public image and reputation (Gulati <i>et al.</i> 2000, Ritala <i>et al.</i> 2014)</li> <li>7. Positive network externality: dominant standards and interoperable systems increases the speed of diffusion and capturing profits (Ritala <i>et al.</i> 2012)</li> <li>8. Educating market about innovations (Ritala 2014)</li> <li>9. Influencing industry dynamics by promoting certain technologies (Andersson <i>et al.</i> 2013; Koch 2017; Ritala 2012)</li> </ol>	<p>Cooperation and interoperability with other service providers ...:</p> <ol style="list-style-type: none"> <li>1.1. ... creates economic benefits in revenue growth and cost reduction</li> <li>1.2. ... brings more customers and new business opportunities</li> <li>1.3. ... gives competitive advantage in our home market</li> <li>1.4. ... increases customer satisfaction about our services</li> <li>1.5. ... gives our company access to new markets</li> <li>1.6. ... improves our company's public reputation (e.g., shows us as an innovative and leading service provider)</li> <li>1.7. ... increases our market penetration and broadens our market coverage</li> <li>1.8. ... helps us to educate market and increase awareness about electronic document exchange benefits</li> <li>1.9. ... influences industry dynamics in general by promoting re-usable technologies</li> </ol>
<b>II Topic: Disadvantages of cooperation</b>	<b>2. Disadvantages of interoperability cooperation</b>
<ol style="list-style-type: none"> <li>1. Increased costs and losses instead of revenue (Zineldin, 2004)</li> <li>2. Influence on pricing (Mira <i>et al.</i>, 2015)</li> <li>3. Becoming dependent on cooperation and thus risking the competitive position (Luo, 2007)</li> <li>4. Imbalanced knowledge sharing and leakage (Bouncken <i>et al.</i>, 2013; Hamel <i>et al.</i> 1989; Loebecke <i>et al.</i> 1999; Pellegrin-Boucher <i>et al.</i> 2013; Ritala <i>et al.</i> 2009)</li> <li>5. Opportunistic behavior and approach from cooperation partner (Hamel <i>et al.</i>, 1989; Luo 2007; Osarenkhoe 2010; Pellegrin-Boucher <i>et al.</i> 2013)</li> </ol>	<ol style="list-style-type: none"> <li>2.1. Interoperability connections are not profitable (high set-up, legal and maintenance costs, too little revenue)</li> <li>2.2. Interoperability gives us challenges in presenting the price of our services to customers</li> <li>2.3. We are forced to do interoperability otherwise we would lose some customers to our competitors</li> <li>2.4. Our company has faced imbalanced knowledge and expertise (e.g. related to compliance): we have to share more knowledge and expertise than we gain value in return</li> <li>2.5. Our company has encountered opportunistic behavior from cooperation partner (opportunism= taking advantage of circumstances with self-interested motives)</li> </ol>

<p><b>III Topic: Enablers of coepetition</b></p> <ol style="list-style-type: none"> <li>1. Knowledge sharing and learning from partners (Bouncken, Kraus 2013; Hamel <i>et al.</i> 1989; Zineldin, 2004)</li> <li>2. Stimulus to innovations (Koch, 2017; Ritala 2012)</li> <li>3. Cooperation to improve common technical standards and new technologies (Andersson <i>et al.</i> 2013; Koch 2017)</li> <li>4. Openness as value driver: access to information, accountability, consensus orientation (Misuraca <i>et al.</i>, 2011; Wilson, Nielson 2000; Zineldin 2004)</li> <li>5. Joint value creation in collaboration with competitors (Ritala 2012; Ritala <i>et al.</i> 2014; Zineldin 2004)</li> </ol>	<p><b>3. Enablers/motivators of interoperability cooperation</b></p> <p>Interoperability and cooperation with other e-invoice service providers have...:</p> <ol style="list-style-type: none"> <li>3.1. ... given our company the opportunity to share our knowledge and expertise with our cooperation partners;</li> <li>3.2. ...made our company to learn from cooperation partners and develop more advanced technical solutions</li> <li>3.3. ... encouraged our company to redesign our services with business benefits</li> <li>3.4. ... encouraged our company to create and implement new technological solutions</li> <li>3.5. ... encouraged our company to implement new standards and formats for electronic document exchange</li> </ol> <p>Statements for ranking in the order of priority:</p> <ol style="list-style-type: none"> <li>3.6. Interoperability cooperation helps our company to be more innovative regarding technical solutions</li> <li>3.7. Interoperability cooperation helps to improve common technical standards and introduce new technologies</li> <li>3.8. Openness (sharing information, accountability, and consensus orientation) is a key success factor in the cooperation with other service providers</li> </ol>
<p><b>IV Topic: Barriers of coepetition</b></p> <ol style="list-style-type: none"> <li>1. Technological barriers: technological and semantic interoperability (Guédria <i>et al.</i> 2014; Kubicek, Cimander 2009; Misuraca <i>et al.</i> 2011)</li> <li>2. Organizational barriers and openness in interoperability cooperation (Misuraca <i>et al.</i> 2013)</li> <li>3. Differences in business models, pricing policies (Ritala, Sainio 2014)</li> <li>4. Too high coordination costs (Zineldin 2004)</li> </ol>	<p><b>4. Barriers of interoperability cooperation</b></p> <p>Statements about possible barriers to interoperability cooperation:</p> <ol style="list-style-type: none"> <li>4.1. The issue of different connectivity protocols and data formats in technical interoperability connection setup (e.g. other service provider has no capability to the connection types we can do and <i>vice versa</i>).</li> <li>4.2. The issue of openness in negotiations: cooperation partner is not willing to share necessary information (both technical and legal/business).</li> <li>4.3. The issue of different business models.</li> <li>4.4. Communication about legal matters and technical interoperability take too long and too much effort.</li> </ol>

Source: created by the author.

The survey was distributed to 65 members of EESPA from 19 countries by the secretary of the association via e-mail. The questionnaire was active for one month (29.03–30.04.2018). Within that period the survey was started (next click made from landing page) by 36 and completed by 26 unique respondents, which makes the response rate to be 40% out of 65. All drop-outs were before the first question which means the respondents had opened the questionnaire but did not start filling it. The author considers the response rate to be sufficient and proper for to make trustworthy quantitative analyses. Completed responses came from 16 countries located by the respondents IP address. Figure 7 below describes the response distribution geographically and the number of responses by countries. These details are informative and not taken into further statistical analyses as they were not collected from the respondents directly, but were provided by the QuestionPro survey platform by an automatic respondent IP location recognition system. Names and sizes of the respondents' organizations couldn't be therefore statistically analyzed.



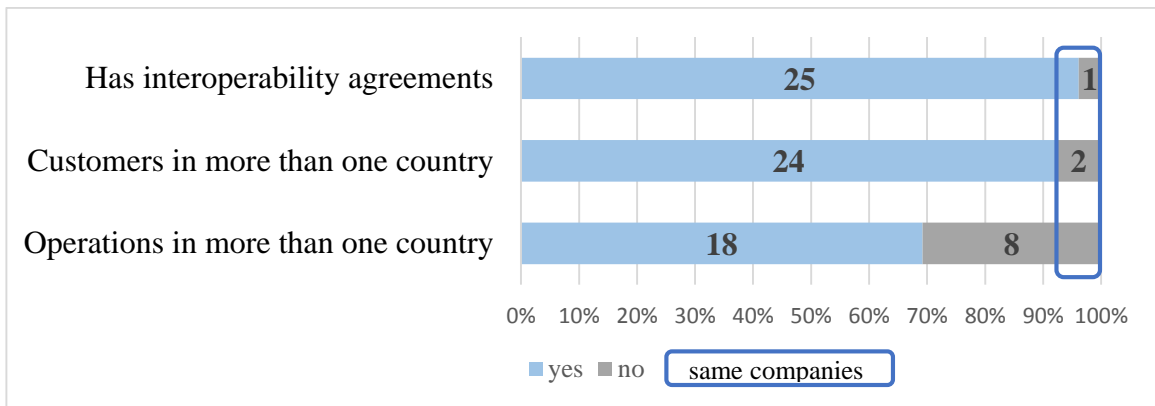
**Figure 7.** Illustrative map of response geographical distribution together with a chart about number of responses by countries according to respondents IP address location. Sources: map generated by the QuestionPro platform as part of survey report, chart created by the author based on QuestionPro survey report data.

The first chapter of the empirical part described the context of EDI service sector, the role of e-invoice service providers and introduced the EESPA community as the sample selection for empirical study. It was followed by the introduction of survey methods, and its content reference to theoretical concepts. The chapter was concluded with survey distribution data. Next chapter will present the analyses of the survey.

## **2.2. Interoperability cooperation motivators and barriers according to e-invoice service providers in EESPA**

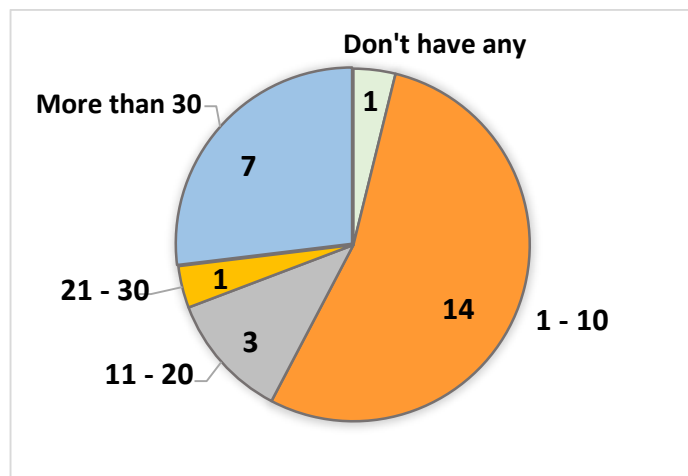
The presentation of empirical study results begins with the analyses of background information from respondents and their main motives for interoperability cooperation. It is followed by the examination of survey results classified into four main topics of cooperation in the context of e-invoice service providers' interoperability cooperation: advantages, disadvantages, enablers, and barriers. Analyses are focused on each topic in general and not going into details of discussing each sub-question or statement under the topic separately unless there is a reason to emphasize something particularly noteworthy. The results discussed in the text are also presented as summarizing tables with key data of statistical analyses (mean, standard deviation and variance, where applicable) for each topic and some illustrative figures for to grasp the information better.

**Background information.** Responses to background questions in the first section reveal that 18 companies out of 26 respondents are international by having operations (offices) in more than one country, 24 companies out of all have customers in more than one country. This fact indicates the need for interoperability cooperation agreements with other service providers (unless the company is presented itself in that particular market of the foreign customer). Almost all companies who completed the survey have interoperability agreements, except one company. These characteristics are illustrated in the figure 8.



**Figure 8.** Key characteristics of the 26 companies participating in the study (created by the author based on survey responses).

*Amount of interoperability agreements* was asked for to evaluate how much interoperability cooperation is practically existent. Figure 9 below illustrates that more than half of the respondents (14 out of 26) have only 1 – 10 interoperability agreements while the rest have more. There is the relatively high amount of those companies (7 respondents) who have more than 30 interoperability agreements. The distribution of this number interval in the questionnaire was based on the author’s industry experience in relation to her background. There is no industry definition about how many interoperability connections is considered many or few.



**Figure 9.** Amount of interoperability agreements on responding companies (created by the author based on survey responses).

*Main motivator* for e-invoice service providers to start interoperability projects is predominantly the customers' request to exchange electronic business documents with their trade partner in another operators' network – this reason was marked by 21 companies (which is 80%) out of 26. The question was a multiple choice type including three possible answers and also had the option “Other” where the respondent could mark its' other opinion. The second motive was considered to be the other operators' or their customers' request – marked by 14 companies and last motive for starting interoperability projects, was the internal strategic decision to gain a competitive advantage – this motivated less than half of the respondents (only 11 companies). There were no more motives provided by respondents under “Other”.

*Competitiveness level* among interoperating e-invoice service providers (25 in total) turned out to be rather high, which shows the relevance of coopetition. Nine companies (35%) considered themselves to be highly competitive and twelve (46%) are somewhat competitive with interoperability cooperation partners. Only three companies found themselves to be complementary service providers and one described how they are highly competitive within their home-base country, but with service providers in other countries, there is no competition.

Regarding *the scope of services* offered by the e-invoice service providers, slightly more than half of the respondents (14 out of 26) offer e-invoice services only, while the remaining companies (12 out of 26) offer a wide range of EDI and value-added network services apart from e-invoicing.

**Advantages of coopetition.** Responses to the statements about advantages are statistically analyzed based on the ranking of statistic mean, which was calculated to each statement response on the Likert 5-grade scale. Standard deviation and variance are added to explain the unity or dispersion of responses. In the survey, the variance describes how much the respondent's opinions differ from each other. The higher the variance and standard deviation from the mean value, the more differing opinions there are among respondents.

Predominantly the most significant advantage of interoperability cooperation among e-invoice service providers was considered to be *increased customer satisfaction*. This conforms to the facts gathered within background information: the first driving force to start cooperation with other service providers is the customer's request which is directly related to the customer satisfaction. As shown in the table 3, the responses to this question had the weakest variance and standard deviation, which means the individual answers didn't vary much and were close to the mean value.

**Table 3.** Advantages of interoperability cooperation ranked by the highest value of the mean.

Rank	Statement about interoperability cooperation advantages	Mean*	Standard deviation	Variance
1	<b>Increased customer satisfaction about our services</b>	<b>4,15</b>	<b>0,46</b>	<b>0,22</b>
2	<b>Company's public reputation (e.g. shows us as an innovative and leading service provider)</b>	<b>3,81</b>	<b>0,94</b>	<b>0,88</b>
3	<b>More customers and new business opportunities</b>	<b>3,65</b>	<b>1,13</b>	<b>1,28</b>
4	Competitive advantage in our home market	3,58	1,10	1,21
5	Increased market penetration and market coverage	3,46	1,21	1,46
6	Economic benefits in revenue growth and cost reduction	3,38	1,10	1,21
7	Access to new markets	3,27	1,08	1,16
8	Educating market and increasing awareness about electronic document exchange benefits	3,19	1,10	1,20
9	Influence on industry dynamics in general by promoting re-usable technologies	2,92	0,80	0,63

\*Scale: 1 – Strongly Disagree; 2 – Disagree; 3 – Undecided; 4 – Agree; 5 – Strongly agree.

Source: created by the author based on calculations of survey results.

The second most preferred advantage was surprisingly *company's public reputation* meaning companies valued highly the influence of interoperability cooperation to their public image on their market(s) because it presents them as innovative and leading service providers. Why it is surprising, is because this advantage outruns economic benefits (ranked on sixths position). Gaining *more customers and new business opportunities* due to interoperability is the advantage ranked to the third position with a rather high variance of response distribution. This advantage can be reasoned with the network effect: interoperability increases network externalities and thus when the service provider enlarges its' network by gaining access to



another operators' network through interoperability, it will attract more customers, as well as new business opportunities, will emerge from it. Wider network, more interoperability connections and access to other operators' networks result in a *competitive advantage*, which is ranked the fourth position in the survey results. According to respondents additional views about interoperability cooperation benefits which they expressed in an optional textbox and which the author has compiled and categorized into table 4, the competitive advantage was considered as benefit especially in the case of local and/or smaller service providers: "...For them, it opens up access to a much larger and already established community thereby improving their competitiveness..." (citation 4 in table 4). *Increased market penetration and market coverage*, ranked in the fifth position are also related to the network effect mentioned above. A Swiss service provider explained: "We as National oriented Service Provider can benefit with Interconnects with International Service Providers because we have a great number of Swiss Suppliers and the International Service Providers have contracts with Global Buyers. The Global oriented service providers don't have in their network the local suppliers. Therefore both service Providers can benefit from the Interoperability." (citation 1 in table 4). So, it is win-win cooperation in satisfying both operators' customer needs accessing each other's markets and networks. Finally, on the sixth position in the ranking of cooperation advantages are *economic benefits in revenue growth and cost reduction*. This advantage was firmly pointed out by scholars in theoretical literature as one of the main advantages of coepetition (Gulati et al., 2000; Yami and Nemeh, 2014; Zineldin, 2004) however; the interoperability cooperation survey proves that service providers do not consider it as a substantial benefit of doing interoperability cooperation. As further analyses of disadvantages and barriers prove, e-invoice service providers find it rather opposite. *Access to new markets* ranked on the seventh place was already described as a concomitant to interoperability network effect and new business opportunities.

**Table 4.** Citations from survey responses related to advantages of interoperability cooperation and their connection to theoretical views.

Nr.of citation	Topic	Citation	Theoretical views
1	<b>Market penetration and coverage</b>	"We as National oriented Service Provider can benefit with Interconnects with International Service Providers because we have a great number of Swiss Suppliers and the International Service Providers have contracts with Global Buyers. The Global oriented service providers don't have in their network the local suppliers. Therefore both service Provider can benefit from the Interoperability."	Network effect and interoperable systems increase the speed of diffusion and capturing profits (Ritala 2012).
	<b>Increased customer satisfaction</b>		Added value to customers and thus increased customer satisfaction (Ritala 2012)
2		"It is a professional courtesy in a real world - Telcos, Banks and Credit cards have all learned how to 'inter-operate' technically and commercially - to the satisfaction of the end-user client base."	
3	<b>Influence on industry dynamics</b>	"Interoperability is a must in a dynamic business world. Cooperation is the best way for all companies. Even if it means competition over the customers. But without competition, nothing gets better. Adapt or die."	Coopetition influences industry dynamics (Ritala 2012; Zineldin 2004)
4	<b>Access to new markets</b>	"... Smaller local players benefit disproportionately from interoperability and can indeed see many of the benefits you have suggested in section 2.1 above. For them it opens up access to a much larger and already established community thereby improving their competitiveness...."	Access to new markets (Ritala 2012; Zineldin 2004).
	<b>Competitive advantage</b>		Improvement in the firm's competitive position through coopetitive alliances (Ritala 2012) and access to more information (Zineldin 2004).

Source: created by the author based survey responses.

*Educating market and increasing awareness* about electronic document exchange benefits got unexpectedly low score by being in the eighth position. In national level interoperability cooperation the common market-educational activities bring significant benefits to all service providers, because it results in more customers and business. But on an international level, this would be more challenging to accomplish as the markets are different and therefore market communication is different, and this explains the reason. On the last position of interoperability cooperation advantages ranking according to e-invoice service providers, is the interoperability *influence on industry dynamics* by promoting re-usable technologies.

Scholars emphasized this benefit in academic literature as a driver of innovation regarding technologies (Ritala 2012), but by e-invoice service providers it was not perceived with such a great value – half of the respondents (13 in number) replied “Undecided” to this question, which explains the weak variance of responses. It may also be explained with the fact that the perceived advantages are greater in more “closer” and “tangible” aspects which have daily influence than the general industry and business context, like higher customer revenues.

**Disadvantages of interoperability cooperation.** In this section, the author continues with the same analyses methods of the survey results and logic as previously. The only difference between the statements with answers on a Likert scale is the addition of N/A option. It was used by two to three respondents on each question, and those are excluded from the statistic calculations. Therefore in the table 5 below which describes the disadvantages of interoperability cooperation ranked by the highest value of the mean, has an additional column indicating the number of respondents to that particular statement.

**Table 5.** Disadvantages of interoperability cooperation ranked by the highest value of the mean.

Rank	Statement about interoperability cooperation disadvantages	Mean*	Standard deviation	Variance	Amount of responses (n)
1	We are forced to do interoperability, otherwise we would lose customers to competitors	3,91	0,90	0,81	n = 23
2	Imbalanced expertise and knowledge sharing: we have to share more knowledge and expertise than we gain value in return	3,65	0,93	0,84	n = 23
3	Interoperability connections are not profitable: high set-up, legal and maintenance costs, too little revenue	3,42	1,14	1,30	n = 24
4	Opportunistic behaviour from cooperation partner (opportunism= taking advantage of circumstances with self-interested motives)	3,26	1,05	1,11	n = 23
5	Challenges in presenting the price of our services to customers	2,83	1,27	1,62	n = 24

\*Scale: 1 – Strongly Disagree; 2 – Disagree; 3 – Undecided; 4 – Agree; 5 – Strongly agree.

Source: created by the author based on calculations of survey results.

The most significant disadvantage of interoperability cooperation according to the opinion of e-invoice service providers is the aspect of *cooperation being forced*, because otherwise,

they would lose customers to competitors and thus there is also the risk of losing the competitive position. This is the shadow side of increased customer satisfaction (the biggest advantage of interoperability) and meeting their expectations: company becomes dependant on interoperability cooperation. As one of the respondents stated: "... For larger vendors, there is little or no benefit in interoperability other than meeting their customer's preference.... But by opening up their network, it removes one of the largest benefits the more established vendors have, which is their network size." (citation nr 5 in table 6).

The disadvantage ranked on the second position, was the *imbalanced knowledge and expertise* sharing. By scholars, this is considered as one of the main threats in coopetition, and it can reach to its extreme as knowledge leakage (Hamel *et al.* 1989; Ritala, Hurmelinna-Laukkanen 2009). To the surprise of the author, this issue is unfortunately present also in the coopetition of e-invoice service providers. It can be explained with the fact, that value-added network (VAN) and electronic data interchange (EDI) services are technology and knowledge-intensive, and as there are historically several communication standards and data formats present depending on region and industry, it is inevitable that the technical levels of operators are different. Thus, for to achieve interoperability the more advanced service providers have to share more knowledge and expertise than they gain value in return.

The third disadvantage by ranking is the *non-profitability of interoperability connections* due to high set-up, legal and maintenance costs and too little revenue. "Effort in relation to the number of transactions is much too high" explains one of the respondents in the survey (citation nr 3 in table 6). Profitability of interoperability connections depends on several factors like the business model, exchanged electronic document volume, number of customers using the interoperability channel, but also technical set-up costs, legal expenses of interoperability negotiations and further scalability of the solution play a role as well. Generally, the purpose of interoperable connections is to make them re-usable for several customers and maintain with minimum effort.

**Table 6:** Citations from survey responses related to advantages of interoperability cooperation and their connection to theoretical views.

Nr.of citation	Topic	Citation	Theoretical views
1	<b>Economic inefficiency</b>	"I do welcome Multilateral Interoperability Solutions (as few as possible!) to sunset the current Bilateral Interoperability Solutions which are not scalable."	Increased costs, and losses instead of revenue (Zineldin 2004)
2		"Connecting closed networks to have a document to move from A to B is not most efficient solution.... "	
3		"Effort in relation to the number of transactions is much too high."	
4	<b>Opportunism</b>	"In reality outside of the Nordic region where interoperability is standard practice, elsewhere most of the larger e-Invoicing vendors are extremely averse to interoperability and place all manner of both technical and commercial barriers in the way of establishing such agreements unless it is of direct benefit to them.... "	Opportunistic behavior from cooperation partner due to their market power (Bouncken, Kraus 2013; Luo, 2007; Osarenkhoe, 2010)
5	<b>Forced cooperation</b>	"... For larger vendors there is little or no benefit in interoperability other than meeting their customer's preference.... But by opening up their network it removes one of the largest benefits the more established vendors have, which is their network size."	Becoming dependent on cooperation (Luo 2007)
	<b>Risking competitive advantage</b>		Risking the competitive position (Luo 2007)

Source: created by the author based survey responses.

*Opportunistic behavior* from cooperation partner is another surprisingly present disadvantage in interoperability cooperation. In academic literature opportunism is emphasized by several scholars as main threat and disadvantage in cooperation and can occur in different contexts such as opportunistic behavior in knowledge sharing, in taking advantage of one partners' market power, exploiting weaker partner's interests and some other contexts (Bouncken, Kraus 2013; Luo 2007; Osarenkhoe 2010). There is a colorful description of opportunistic behavior provided also by a respondent in the survey: "In reality, outside of the Nordic region where interoperability is standard practice, elsewhere most of the larger e-Invoicing vendors are extremely averse to interoperability and place all manner

of both technical and commercial barriers in the way of establishing such agreements unless it is of direct benefit to them...." (citation nr 4 in the table 6).

On the last position of disadvantages in interoperability, cooperation is ranked the *price pressure* by stating that interoperability gives challenges in presenting the price of services to customers. Interestingly, the distribution of the responses to that question had the highest variance, and the disagreement side of answers range was slightly higher. Therefore it can be concluded that price pressure as a disadvantage is not with as big significance as other previously mentioned issues.

**Enablers of cooperation.** In the empirical study questionnaire, there were three viewpoints for to investigate on the facilitators and motivators of interoperability cooperation among e-invoice service providers. First, there was general question about the enablers and motivators in the form of ranking the statements in the order of importance; second, there was the knowledge sharing and innovation aspect – statements to be evaluated on Likert scale; and third – the aspect of EESPA and network influence on improving the interoperability cooperation which were also statements on Likert 5-grade scale.

For a general ranking of enablers and motivators of interoperability cooperation, there were altogether six statements for prioritizing the enablers of collaboration by using drag-and-drop answering method provided by electronic platform QuestionPro. In the question it was required to rank at least four choices out of six and so did the majority of respondents. Ten respondents decided to list the remaining two as well. Results of the ranking together with the absolute numerical value of each rank position are presented in the **table 7**.

**Table 7.** Motivators and enablers of interoperability cooperation ranked by respondents.

<b>Rank</b>	<b>Statements about interoperability cooperation motivators and enablers</b>	<b>Absolute value*</b>
<b>1</b>	<b>We do interoperability for to meet better our customers' requirements and needs</b>	<b>121</b>
<b>2</b>	<b>Interoperability is with strategic importance to our company</b>	<b>113</b>
<b>3</b>	<b>Interoperability cooperation helps to improve common technical standards and introduce new technologies</b>	<b>95</b>
4	Openness (sharing information, accountability and consensus orientation) is a key success factor in the cooperation with other service providers	84
5	Interoperability cooperation helps our company to be more innovative in terms of technical solutions	56
6	Environmental impact through our services (electronic business documents save paper and forests) is one of the motivators to do interoperability cooperation	29

\*The Absolute value is calculated by sums of rankings when multiplying the number of responses to the rank with the weights, by giving to the number one choice a weight of 6 and the number six choice a weight of 1.

Source: created by the author based on calculations of survey results.

As already repeatedly stated earlier, for e-invoice service providers the overwhelmingly first motivator for interoperability cooperation is their *customers' requirement and need* for electronic document exchange outside their network. Respondent's additional comments confirmed the highest priority of it: "A fragmented, diverse and international community of buyers and suppliers needing to be provided with simple and effective connectivity." (citation nr 2 in table 8) and "... For larger vendors, there is little or no benefit in interoperability other than meeting their customer's preference to extend their reach to more of their buyers and suppliers. ..." (citation nr 3 in table 8). It is the case especially with large and influential customers: "All supposed benefits above are very long term. We solve day to day pains pragmatically. Hence interoperability is exclusively driven by the request of very large customer like government or large blue chip" (citation nr 1 in the table 8).

**Table 8.** Citations from survey responses related to enablers and motivators of interoperability cooperation and their connection to theoretical views.

Nr.of citation	Topic	Citation	Theoretical views
1	<b>Meeting customers' needs and expectations</b>	"All supposed benefits above are very long term. We solve day to day pains pragmatically. Hence interoperability is exclusively driven by the request of very large customer like government or large blue chip" <sup>6</sup>	Joint value creation in collaboration with competitors (Ritala, 2012; Ritala <i>et al.</i> 2014; Zineldin 2004)
2		"A fragmented, diverse and international community of buyers and suppliers needing to be provided with simple and effective connectivity."	
3		"... For larger vendors there is little or no benefit in interoperability other than meeting their customer's preference to extend their reach to more of their buyers and suppliers. ..."	
4	<b>Alliance/ network support</b>	"Where we can agree with the Service Provider, the EESPA MIA <sup>7</sup> has been of great value to ease the legal matters."	Clustering benefits (Ketchen <i>et al.</i> 2004)
5		"... 2.: EESPA gives us Insights, Influence, Contact with other Providers, Debates etc. All in all we find EESPA a great initiative. ... "	

Source: created by the author based survey responses.

In ranking the interoperability cooperation enablers, there was another motivator rated by respondents as number one choice by priority: *the strategic importance of interoperability*. This result can be explained by the importance of market position, gaining competitive advantage and access to new markets. There was the almost equal amount of responses which placed these two enablers and motivators as number one driving forces for interoperability cooperation with other service providers. Next statement in the ranking (see table 7) is related to *innovation and improvement of common technical standards*, which in

<sup>6</sup> Blue chips are large (international) corporations who are stable and financially strong. They have a solid name in the industry with dominant products or services, for example Coca-Cola (author's remark based on <https://www.bluechiplist.com/what-are-blue-chips/>).

<sup>7</sup> EESPA MIA is the Model Interoperability Agreement created and published by EESPA for the benefit of its' members (author's remark based on <https://eespa.eu/glossary/mia/>).



coopetition academic literature were highly valued benefits of coopetition, especially in cooperative networks (Andersson *et al.* 2013; Koch 2017; Ritala 2012). *Improvement of common technical standards* and introducing new technologies reached in the general ranking of importance the third place, so it is rather highly valued enabler of interoperability cooperation. In literature, it was claimed how common standards and technologies enable better collaboration because it makes possible better technical interoperability (Andersson *et al.* 2013; Koch 2017). For e-invoice service providers' interoperability, it takes less effort, costs and time to establish new interconnection channels.

On the next position of cooperation, enablers were *openness as a key success factor* in collaboration. The importance and high ranking of sharing information, accountability and sharing knowledge is related to best practice of cooperation in general, to the effort of EESPA to improve cooperation within community, but as well to previously in the section of disadvantages mentioned opportunistic behaviours and unbalanced knowledge sharing issues, which unfortunately are present in coopetition of e-invoice service providers according to the results of this survey. In the theoretical part, it was also explained that openness is a value driver in cooperative relationships by providing access to information and because of accountability and consensus orientation (Misuraca *et al.* 2011).

*Being innovative in terms of technical solutions* due to interoperability ranked on the fifth position. This aspect is related to the improvement of common technical standards which is explained above. On the last stand by ranking was the *environmental impact* through the e-invoice services by saving paper and forests which got low ranking. This argument is useful for end-customers marketing communication about benefits of exchanging electronic business documents, but it doesn't work for service providers as interoperability motivator.

*Influence of knowledge sharing and learning from partners* is analyzed in the next subsection with statements on the 5-grade Likert scale. The theoretical literature emphasizes the *learning from partners and sharing knowledge* and expertise as one of the main benefits and enablers of coopetition (Bouncken 2013; Hamel *et al.* 1989) and innovation emerging in cooperative networks. Interestingly, in this empirical study, this benefits did not find approval by e-

invoice service providers. Among the statements about knowledge sharing and innovation they got the lowest rank by statistic mean – see table 9 below and the statements in it ranked on the third and fifth place. When analyzing these two particular questions in more detail, then answers show that both got more disagreeing answers than agreeing on answers. For example, the statement about learning from cooperation partners and as a result of it developing more advanced technical solutions (see the statement ranked on the fifth place) had the disagreement rate of 54% while 15% remained undecided and only 31% of respondents out of 26 agreed with it.

Positively was approved the aspect of technological advancement and stimulus to innovation – another benefit and enabler of cooperation emphasized by scholars (Koch 2017; Ritala 2012). The table 9 below demonstrates that statements about *implementing new technical standards and formats* for electronic document exchange and *creating and implementing new technological solutions*, in general, got the highest rank by statistic mean in 5-grade Likert scale. Both questions got more or equally agreeing than disagreeing responses.

**Table 9.** Interoperability cooperation influence on knowledge sharing and innovation ranked by the highest value of the mean.

Rank	Statements about knowledge sharing and innovation due to interoperability cooperation	Mean*	Standard deviation	Variance
1	Interoperability cooperation has encouraged us to implement new standards and formats for electronic document exchange	3,15	1,08	1,18
2	Interoperability cooperation has encouraged us to create and implement new technological solutions	2,96	1,11	1,24
3	Cooperation has given us the opportunity to share our knowledge and expertise with cooperation partners	2,88	0,95	0,91
4	Interoperability cooperation has encouraged us to redesign our services with business benefits	2,81	1,06	1,12
5	Interoperability cooperation has made our company to learn from cooperation partners and develop more advanced technical solutions	2,73	0,96	0,92

\*Scale: 1 – Strongly Disagree; 2 – Disagree; 3 – Undecided; 4 – Agree; 5 – Strongly agree.

Source: created by the author based on calculations of survey results.

This result indicates that in the interoperability cooperation with other e-invoice service providers the cooperation partners do not appreciate knowledge sharing and learning from each other, but as a result of collaboration, they have become inspired to upgrade their technical capabilities by introducing new formats and developing new technologies.

**Influence of network to the competition.** About the support of EESPA network community, the respondents of the survey gave the most positive feedback in general out of all questions in this questionnaire. There were five Likert scale statements to analyze the influence of EESPA activities and support to the interoperability cooperation of European e-invoice service providers. The results are ranked by the value of mean in table 10. As it can be seen, the standard deviation and variance of responses to these statements are rather low, and the mean values are very high compared to other Likert scale matrix question in this survey.

**Table 10.** Interoperability cooperation influence on knowledge sharing and innovation ranked by the highest value of the mean.

Rank	Statement about EESPA influence on interoperability cooperation	Mean*	Standard deviation	Variance
1	EESPA membership has been useful in terms of communication with other (potentially new) interoperability partners	4,23	0,65	0,42
2	EESPA model interoperability agreement drafts reduce our legal costs	4,19	0,75	0,56
3	Cooperation framework support provided by EESPA is useful for our company	4,00	0,80	0,64
4	EESPA influences industry dynamics by promoting best practices	3,81	0,57	0,32
5	Belonging to EESPA supports our company's competitive advantage	3,65	0,75	0,56

\*Scale: 1 – Strongly Disagree; 2 – Disagree; 3 – Undecided; 4 – Agree; 5 – Strongly agree.

Source: created by the author based on calculations of survey results.

Most highly appreciated was the *communication opportunity* with other (potentially new) interoperability partners within the circle of EESPA membership. As stated by one of the respondents: "... 2.: EESPA gives us Insights, Influence, Contact with other Providers, Debates etc. All in all we find EESPA a great initiative. ... " (citation nr 5 in table 8). Another

great benefit of EESPA membership received by members is the *reduction of legal costs* due to EESPA model interoperability agreement drafts. As the interoperability cooperation agreement negotiations mostly are taking a rather big effort and are quite time-consuming, because lawyers have to be involved in the matter of analyzing the contract draft, which is provided by either of the parties. Thus, when using the model interoperability agreement draft provided by the association, it means that the preliminary homework is already done because of members of the association are aware of the agreement draft content, and there is no need to spend additional resources to legal consultation. It got confirmed by a respondent in the survey as well: “Where we can agree with the Service Provider, the EESPA MIA has been of great value to ease the legal matters.” (citation nr 4 in table 8).

**Barriers of coepetition.** The last section of analyses focuses on barriers to interoperability cooperation. The survey had two types of questions about the topic. First, there was the question about what the respondents consider as the biggest barriers to interoperability with other service providers. They were asked to rank the five options provided by the author on a drag-and-drop method described earlier related to the same type of question about enablers of coepetition. Results of ranking the barriers are presented in the table 11. Second, the respondents had to indicate their opinion on the 5-grade Likert scale about possible obstacles presented in four statements, if their company had experienced them. And, as in all sections of the survey – for further views about barriers there was the optional free text question, which was used by several respondents who presented their opinions.

**Table 11.** Barriers of interoperability cooperation ranked by respondents.

<b>Rank</b>	<b>Statements about interoperability cooperation barriers</b>	<b>Absolute value*</b>
<b>1</b>	<b>Compliance issues</b>	<b>86.00</b>
<b>2</b>	<b>Technical syntax</b>	<b>76.00</b>
<b>3</b>	<b>Legal agreements</b>	<b>75.00</b>
4	Establishing connectivity	62.00
5	Data formats	55.00

\*The Absolute value is calculated by sums of rankings when multiplying the number of responses to the rank with the weights (the number one choice a weight of 5 and the number five choice a weight of 1).

Source: created by the author based on calculations of survey results.

The citations from respondents are gathered into the table 13. Below with references to the relevant topics covered in theoretical part.

From the answers ranking in the table 11, it turned out that the *compliance issues* are regarded as number one barrier in interoperability cooperation. In the context of e-invoicing, the compliance means the e-invoice conformance to rules and requirements set by business parties (usually from buyers' side), but also legislative requirements related to taxes, real-time reporting, invoice integrity, authenticity and archiving<sup>8</sup>. It clearly is a challenge for e-invoice service providers to meet the multinational compliance requirements – not all the service providers support compliance with value-added services as also confirmed by a respondent in the survey: "... different Service Providers have different offerings - some with compliance; most with no thought at all to compliance - we cannot interoperate with Service Providers who are not serious about compliance." (citation nr 8 in the table 13).

*Technical syntax* was considered the second-ranked barrier. In the context of e-invoicing, syntax means a technical, machine-readable language in which the data elements of an electronic invoice are presented. As there are already historically different EDI standards in use depending on sector and region, it is presumable, that this issue exists despite historical

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<sup>8</sup> Defined by EESPA glossary: <https://eespa.eu/glossary/compliance/>

attempts to create unifying standards. Also, theoretical views indicated the need for support by regulatory standards in interoperability on technical syntax level (Misuraca *et al.* 2011).

The third barrier, *legal agreements* is related to organizational interoperability as defined by the scholars Misuraca *et al.* (2011) and Kubicek, Cimander (2009), and in this matter, the openness in information exchange and collaboration play the principal roles. These can reduce the efforts spent on reaching the consensus about legal agreements.

*Establishing connectivity* as a barrier describes obstacles in the execution of technical integration projects which may be very time- and work-consuming due to differences in technicalities as well as multilateral functional requirements. *Data formats* differences as a barrier are related to interoperability and compliance issues of different national and international formats because by countries and regions they differ.

Responses to the second question reveal in more details about interoperability cooperation barriers – see the results in table 12 the respondents’ opinions on a Likert 5-grade scale with implication to the level of barrier are ranked based on the value of statistic mean.

**Table 12.** Barriers of interoperability cooperation ranked by the highest value of the mean.

Rank	Statement about interoperability cooperation barrier	Mean*	Standard deviation	Variance	Amount of responses (n)
1	The issue of different business models	3,96	0,89	0,79	n = 25
2	Communication about legal matters and technical interoperability take too long and too much effort	3,80	1,00	1,00	n = 25
3	Openness in negotiations: partner is not willing to share necessary information (both technical and legal/business)	3,24	0,97	0,94	n = 25
4	The issue of different connectivity protocols and data formats in technical interoperability connection setup	2,75	1,22	1,50	n = 24

\*Scale: 1 – Not a barrier; 2 – Low barrier; 3 – Average; 4 – High barrier; 5 – Very high barrier.

Source: created by the author based on calculations of survey results.

The most significant interoperability cooperation barrier based on Likert scale analyses is the *difference in business models*. When it comes to e-invoicing interoperability, then it is evident that EU countries have different market environments and e-invoicing adaption levels, as well as various service providing standards regarding technical/compliance requirements. All these factors are the reasons for differences in business models, which is especially hard to overcome in international interoperability cooperation. As also found in theory by Ritala and Sainio (2014), differences in business models can be one of the major barriers for cooperation, and this makes it challenging to establish mutually beneficial cooperation relations. This fact was found to be repeatedly confirmed in the study. Apart from being ranked as the most significant barrier by respondents according to the table 12 (where 65% of respondents considered it to be high to very high barrier), the additional opinions also approve it: "... To come to full Interoperability it is not about technology but about business models. Since these differ between large players it will remain a struggle." (citation nr 3 in table 13). One of the respondents even pointed out how the issue of different pricing models is inhibiting the e-invoicing market to gain its full potential: "... Everybody must charge their own customers and not "lock in" the customers via 3 corner models. As long as the 3 corner models contract still is active, the E-invoicing market won't reach its full potential." (citation nr 2 in table 13). Also, the differences in service level minimum requirements are evident, as stated by another respondent: "The issue is less about the deployed technology than disparate service propositions and the confusion caused by the lack of a common minimum level of service/compliance provision ..." (citation nr 1 in table 13).

The second biggest barrier according to the respondent's opinions ranked on the Likert scale is the *too high coordination costs*, stating that communication about legal and technical matters takes too much effort. When the e-document volumes exchanged via interoperability channel are not many for to pay off the channel creation and maintenance costs, then it may seem that the costs and efforts in establishing the interoperability are much too high compared to uncertain returns, as also found by Zineldin (2004) in theoretical part. One of the respondents stated: "Too much coordination to mirror specific content requirements from end customers." (citation nr 5 in the table 13).

**Table 13.** Citations from survey responses related to barriers of interoperability cooperation and their connection to theoretical views.

Nr.of citation	Topic	Citation	Theoretical views
1	<b>Business model issues</b>	"The issue is less about the deployed technology than disparate service propositions and the confusion caused by the lack of a common minimum level of service/compliance provision ... "	Differences in business models and pricing policies (Ritala and Sainio, 2014)
2		"... Everybody must charge their own customers and not "lock in" the customers via 3 corner models. As long as the 3 corner models contract still is active, the E-invoicing market won't reach its full potential."	
3		" ... To come to full Interoperability it is not about technology but about business models. Since these differ between large players it will remain a struggle."	
4		"Roaming Fees and 3 corner models."	
5	<b>Too long communication process</b>	"Too much coordination to mirror specific content requirements from end customers."	Too high coordination costs (Zineldin 2004)
6	<b>Opportunistic interests and behavior</b>	"Service Providers operating on an International basis prefer to push the suppliers to their Web-based services and onboard them instead of pushing them to send the e-invoices through their service provider."	Opportunistic behavior in taking advantage of one partners' market power or competitive interests (Bouncken, Kraus, 2013; Luo, 2007; Osarenkhoe, 2010).
7		"The only enabler of greater interoperability /co-operation will be government mandates. Otherwise commercial/competitive interests will continue to block interoperability efforts."	
8	<b>Compliance issues: technical and legislative</b>	"Compliance - different Service Providers have different offerings - some with compliance; most with no thought at all to compliance - we cannot interoperate with Service Providers who are not serious about compliance."	Technological barriers regarding interoperability (Guédria et al., 2014; Kubicek and Cimander, 2009; Misuraca et al., 2011)

Source: created by the author based survey responses.

The third barrier, *openness in negotiation* is an obstacle in cooperation when the partner is not collaborative. This issue was ranked on the third position, and according to the value of



the mean, it is not considered as so high barrier as the two previously described ones. Information sharing is connected to previously described organizational interoperability, but also opportunism which was considered as a cooperation disadvantage and analyzed earlier. The last barrier on this list, *the issue of different connectivity protocols and data formats* got a rather low ranking according to statistic mean, which characterizes this obstacle as rather a low barrier. This statement had a wide variance (1,5) in answers distribution, where more than half of respondents considered these technicalities as low or not a barrier at all.

Additional barriers which were not listed by the author among predefined statements came out from the respondent's opinions from the optional question for to state the further views. They are listed in the table 13 as citations nr 6 and 7 related to the topic of opportunistic behavior. Opportunism was analyzed by the author as one of the possible disadvantages of cooperation and can also be counted as a barrier to cooperation. Both of these statements refer to opportunistic behavior in taking advantage of one partners' market power or competitive interests

For to sum up the survey analyses about cooperation advantages, disadvantages, enablers and barriers, it can be stated that for e-invoice service providers in Europe, the direct economic benefit in revenue growth and cost reduction are not the first arguments for interoperability cooperation, but instead the main drivers for interoperability are customers needs and requests, the operators' need to gain competitive advantage, and as a result of interoperability getting more customers and new business opportunities.

It turned out, that for bigger and more international service providers the interoperability cooperation is less beneficial than it is to smaller and more national e-invoice service providers. It can be explained with the fact, that bigger international operators already have operations in several countries. Thus their need for additional interoperability cooperation and connections is less and probably more targeted at satisfying specific customers' needs. Thus, more than the access to new markets, they need the access to particular networks in those markets based on their customer requirements and expectations.

Most significant barriers were considered to be differences in business models, compliance issues and disproportionately big effort for establishing interoperability (both, in technical and organizational levels) compared to potential returns. Despite the shortcomings, interoperability cooperation advantages and enablers seem to exceed for e-invoice service providers the disadvantages and barriers, because interoperability and collaboration with other service providers is of strategic importance from several aspects: achieving increased customer satisfaction, gaining competitive advantage, broader presence on international markets, improvement of common technical standards, and being more innovative.

One of the respondents made a great statement which suits well to finish this chapter (see citation nr 3 in the table 13): "Interoperability is a must in a dynamic business world. Cooperation is the best way for all companies. Even if it means competition over the customers. But without competition, nothing gets better. Adapt or die." The author agrees with that opinion.

## **SUMMARY**

We are experiencing the era of digitalization, and nowadays economy is more and more moving in the direction of a new paradigm, which is the Real-Time Economy (RTE). It means that all the transactions between commercial business parties are happening in digital format, automatically generated and completed in real time with no or minimum human intervention. Building blocks of RTE are among others the real-time payments (SEPA), e-Invoicing, e-Procurement, automated VAT-reporting. Making business processes more efficient, reducing costs, increasing created value and profit are the motives for RTE in private sector. For the public sector, RTE enables to diminish underground economy, minimize VAT gap and increase transparency.

Electronic Data Interchange (EDI) operators and e-invoice service providers are needed for to translate, process, and transmit electronic documents carrying the business data between trade partners because there are thousands of different Enterprise Resource Planning (ERP) systems and accounting solutions which all “speak a different language”. EDI means the automated transfer of electronic messages between computer systems without the need for human intervention.

EDI and e-invoice operators are Value Added Network (VAN) service providers in mainly with the emphasis on specific industry processes, especially in retail, distribution, logistics, but also manufacturing and automation of finance processes. Each service provider has its own network within what the document exchange between trade partners (buyers and sellers) is happening. Interoperability of EDI and e-invoice service providers enable the customers in different operators’ networks to exchange e-invoices and other electronic business

documents between the networks. Interoperability cooperation between service providers involves collaboration with competitors and is therefore somewhat intriguing. The phenomenon of simultaneous cooperation and competition is called *coopetition*.

The aim of this master thesis was to find out what are the advantages, disadvantages, enablers and barriers of interoperability cooperation among e-invoice service providers. The author considered the term “coopetition” from scientific literature as a synonym to “interoperability cooperation” for to make it better comprehensible to the audiences outside the academic field.

Interoperability and collaboration of e-invoice service providers are needed for to satisfy the needs of customers, and market demand in general. Current problems lie in different business models, technical interoperability and compliance issues, differences in standards and service levels.

The topicality of the subject is also related to the EU Directive 2014/55/EU which will become effective in 2019 and make e-invoices mandatory for the public sector in public procurement. This directive has already been transposed to national legislations of EU member states and drives market demand toward interoperable networks for e-invoice exchange.

For to fulfill the aim of the thesis, there were four research tasks established. First of them was about defining and describing the essence of coopetition. In the theoretical part, it was revealed that the core idea of cooperative business relationships is to establish mutually beneficial partnership relations with other actors in the business ecosystem, including competitors. For example, companies create a strategic alliance for product development and innovation, but simultaneously also compete with each other in selling and marketing of these same products they developed in collaboration.

Coopetition originated from game-theory and was brought into the business environment in the 1980-s. Wider interest for the phenomenon in academic world arose after the scholars Brandenburger and Nalebuff published their best-selling book *Co-opetition* in 1996. A broad perspective of coopetition concept, which was implemented by these scholars describes coopetition phenomenon as relationships value-net established between complementary

organizations - suppliers, customers, competitors, “complementors” and the company itself. The more specific and precise approach presented by Bengtsson and Kock in 1999 defines coopetition as a form of relationship between direct competitors where collaboration and competition are happening simultaneously. Several typologies of coopetition can be summed up into two dimensions: first, the number of actors in a cooperative relationship (dyadic, triadic, multiple) and second, the economic activities in the value-chain: horizontal or vertical cooperation relationship between competitors. Coopetition can occur in four levels: individual (person) level, intra-firm/organization level, inter-firm level and network level, and is used as a strategy in several types of business relationships such as supplier-buyer relationships, but also between supply chains and strategic networks.

Second research task intended to clarify the advantages, disadvantages, enablers, and barriers of coopetition in network level inter-firm relationships. According to theoretical views, there are several benefits on network level inter-firm coopetition such as economic benefits on sharing costs of entering new markets, collaborative R&D activities for implementing new products and services, improving technologies and influencing industry dynamics. Shadow sides of coopetition are the threat of opportunism, the possibility of unbalanced knowledge sharing and knowledge leakage, risking the competitive position, and becoming dependant on cooperative relationship. According to scholars, the enablers of coopetition are knowledge sharing, learning from partners and combining competencies, openness in collaboration and joint value creation. Importance of cooperative networks relies in encouraging companies for internal innovation through gaining access to competitor’s technology and know-how. Barriers of coopetition turned out to be differences in business models, obstacles related to interoperability, lack of trust and high coordination costs. By the end of the first chapter the four-corner conceptual model was developed for the empirical study: analyses of coopetition within network level inter-firm relationships based on four aspects - advantages, disadvantages, enablers and barriers.

Third research task was related to empirical study with the aim to introduce the context of Electronic Data Interchange (EDI) coopetition, empirical study methodology, process and sample selection. For to fulfill that task, the empirical chapter of the thesis analyzed the

interoperability cooperation among the members of European E-Invoicing Service Providers Association (EESPA), which is a Pan-European non-profit trade association assembling more than 70 leading European service providers in the sector. The author decided to conduct the empirical study in collaboration with EESPA among its' members because the group of companies participating there represents the industry rather good both from geographic distribution as well as characteristics of the companies by involving enterprises in different sizes and scope of business areas in Electronic Data Interchange (EDI) sector. For the empirical study, the method of the online questionnaire was chosen. The responses were statistically analyzed and ranked by statistic mean in each of the four topics. In addition the standard deviation and variance of responses distribution were shown.

Last research task was about making a quantitative survey analyse of the advantages, disadvantages, enablers and barriers of interoperability cooperation among EESPA members. Based on analyses of the empirical study results, the author concluded that that the main drivers for interoperability cooperation among e-invoice service providers are their customer's needs and requests. Also, the service providers' need to gain competitive advantage and as a result of interoperability. Getting more customers and new business opportunities were considered as strong motives for cooperation. It surprisingly turned out, that for bigger and more international service providers the interoperability cooperation is less beneficial than it is to smaller and more on national level active e-invoice service providers. This can be explained by the fact, that bigger international operators already have operations in several countries. Thus their need for additional interoperability cooperation and connections is less. Biggest barriers for cooperation with other service providers are differences in business models, compliance issues and too high coordination costs in establishing interoperability compared to potential returns. Additionally, the opportunistic behavior in taking advantage of one partners' market power or competitive interests were pointed out as interoperability cooperation barriers.

All in all, despite the shortcomings, it can be concluded, that interoperability and collaboration with other service providers are with strategic importance to e-invoice service providers in EESPA because it enables to achieve increased customer satisfaction, gain

competitive advantage and wider presence on international markets, improve common technical standards and be more innovative.

This master thesis has made the following contributions: it clarified what are considered the main advantages and disadvantages of coopetition in the network level inter-firm relations and in particular, what enables and inhibites the coopetition in ICT sector. Since the sample for empirical study varied and contained different kind of enterprises, both in size and business profile, then the results of the research can be generalized to a certain extent (in the perspective of similar sectors and geography).

Limitations and opportunities for further research: because this empirical study was carried out anonymously, it is lacking of data regarding respondents' demographics and specifics of the companies. This may be the analytical shortcoming which did not enable to research several aspects like, if and how much the size of the company matters in coooperative collaboration, how are related the company size, presence in different markets and number of interoperability agreements, if and what kind of differences there are in geographical regions related to coopetition (Northern-Europe vs Southern-Europe) - these are just few aspects which could be the further research questions and give valuable insights into coopetition in this sector.

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## APPENDICES

### APPENDIX 1: Members list of EESPA

Adjusted by the author based on: <https://eespa.eu/membership-list/> , page last update 2018-01-23

COMPANY	Country	Main Business Activity	Business territory
B2Boost	Belgium	B2B Integration and Messaging, e-Invoicing, Sales and Inventory Management, B2B e-Commerce Platform	Belgium, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain, Switzerland, United Kingdom
UnifiedPost	Belgium	Multi-channel communication and processing solutions: electronic administrative documents, e-invoices , centralized legal e-archiving	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom, USA, Asia
Babelway	Belgium	B2B Integration, EDI, e-Invoicing, PEPPOL, archiving	Belgium, Denmark, France, Luxembourg, Netherlands, Norway, Switzerland, United Kingdom, USA, WW
Advalvas	Belgium	e-Invoicing service provider	Belgium
Elavon Financial Services	Belgium	Payment processing, eCommerce, the top 5 global payment provider	World Wide
Speos	Belgium	Document management solutions, both paper and digital	Belgium
TrueCommerce	Denmark	Electronic exchange of messages between organisations across all sectors	Denmark, Finland, Norway, Sweden, United Kingdom

## APPENDIX 1 Continued: Members list of EESPA

Bizbrains	Denmark	B2B and Application integration services provider, e-Invoicing	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Turkey, USA, Asia, WW
Tradeshift	Denmark	Business Commerce Platform	Global
KMD	Denmark	Digitization, analytics and BI solutions, Data management and protection services, industry solutions	Denmark, Norway, Sweden
Fitek	Estonia	e-Invoicing Service provider	Estonia, Latvia, Lithuania, Slovakia
OP Financial group	Finland	Banking, wealth management, insurance and healthcare.	Estonia, Finland, Latvia, Lithuania
Tieto	Finland	Industry specific software solutions, digitization services, business process and infrastructure services, application platforms	Austria, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Netherlands, Norway, Sweden
Maventa	Finland	e-Invoicing Service Provider	Finland
Ropo Capital	Finland	Information Logistics Services, Accounts Receivable Outsourcing and Financing, Receivables and Credit Management, Collection Services	Finland
OpusCapita	Finland	Cash-To-Cash SaaS offering - including P2P process, O2C process, Cash Management and Business Network Services	Finland, Germany, Norway, Poland, Sweden
Basware	Finland	Purchase to pay and e-invoicing solutions	Belgium, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, United Kingdom, USA, World WideW
Liaison Technologies	Finland	Enterprise Application Integration and Data Management	Belgium, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, United Kingdom

## APPENDIX 1 Continued: Members list of EESPA

Worldline	France	European leader in the payments and transactional services industry	Austria, Belgium, Czech Republic, Finland, France, Germany, Italy, Luxembourg, Netherlands, Poland, Slovakia, Spain, United Kingdom, Asia, World Wide
Ventya	France	Electronic invoicing	France
Esker	France	Document process automation, Quit Paper™, order-to-cash and procure-to-pay solutions.	Belgium, France, Germany, Italy, Spain, United Kingdom, USA, Asia, World Wide
Cegedim	France	IT technologies and services	Belgium, France, Italy, Romania, United Kingdom
EDT SAS France	France	B2B and e-invoicing Service Provider	Belgium, France, United Kingdom, Sri Lanka
Perfect Commerce	France	Cloud solutions for Purchase and Finance, and B2B Business Network	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Turkey, USA
GHX Europe	Germany	Technologies for healthcare industry.	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, USA
Inposia Solutions	Germany	INPOSIA combines specialized EDI / B2B competence in solutions for operations, consulting and service and support.	Austria, Belgium, France, Germany, Italy, Netherlands, Poland, Switzerland, Turkey
Crossinx	Germany	Leading German service provider for e-Invoicing, EDI and Supply Chain Finance	Austria, Germany, Switzerland
TecAlliance	Germany	Leading solution for the automotive aftermarket, providing vehicle data from one single source	World Wide
Impact	Greece	Electronic Document Exchange Services - eInvoicing	Greece, Serbia



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**APPENDIX 1 Continued: Members list of EESPA**

Tesisquare	Italy	Digital services, B2B integration, EDI, electronic invoicing, supply chain finance, Peppol, dematerialization, transportation	France, Italy, Netherlands, Slovenia, Spain, Switzerland, United Kingdom, Turkey, USA, World Wide
io-market	Liechtenstein	Purchase to pay and E-invoicing solutions, electronic data interchange between companies (EDI) and Portal-Solutions for the optimization of procurement processes.	Austria, Belgium, Denmark, France, Germany, Italy, Liechtenstein, Netherlands, Portugal, Slovakia, Spain, Sweden, Switzerland, United Kingdom, WW
TIE Kinetix	Netherlands	Digital supply chain services: World's First Self Service Partner Automation Platform providing B2B and B2G EDI and E-Invoicing Services.	Belgium, France, Germany, Netherlands, USA
Order2Cash	Netherlands	Order2Cash optimization service provider: Hybrid e-Invoicing with extensive, global B2B/B2G interoperability and full VAT compliancy, advanced email and invoice tracking, delivery and reporting features.	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Turkey, USA, Asia
EVRY	Norway	IT solutions to Nordic companies, financial institutions, national public sector entities, municipalities and health authorities.	Denmark, Finland, Norway, Sweden
Comarch	Poland	IT solutions for multiple industries. B2B collaboration incl. master data management, procure-to-pay supply chain management, B2B e-commerce and financing.	Belgium, Bulgaria, France, Germany, Hungary, Italy, Luxembourg, Netherlands, Poland, Spain, United Kingdom, Turkey

## APPENDIX 1 Continued: Members list of EESPA

Saphety	Portugal	EDI and Electronic Invoicing, Electronic Bill Presentment, Electronic Procurement - public and private - and Data Synchronization solutions.	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, USA, Asia, WW, Australia; Colombia; Mexico; New Zealand; Marocco; South Africa.
Transfond	Romania	Operator of the Electronic Payment System of Romania (EPS). In addition Electronic Invoicing Services and Electronic Documents Archiving Service.	Romania
Seres	Spain	Electronic invoicing, EDI Supply chain Automation, e-Procurement, HR process automation, Document process automation	Belgium, France, Germany, Italy, Portugal, Spain, United Kingdom, USA, Mexico, Colombia, Ecuador, Peru, Argentina, Canada
B2B Router	Spain	Electronic Invoice service provider, web portal to SMEs and larger corporations and B2B connection from the main ERP systems	Spain
Eurobits Technologies	Spain	Account Aggregation, Electronic Invoicing	France, Spain, United Kingdom, LATAM
Pagero	Sweden	Cloud services to global companies for automating purchase to pay, order to cash and logistics to pay	Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, United Kingdom, Turkey, USA, UAE
Inexchange Factorum	Sweden	E-invoice provider	Denmark, Finland, Iceland, Norway, Sweden
Lexmark/Kofax	Sweden	E-invoicing	Sweden
Nordea Bank	Sweden	Financial Institution	Sweden
CGI Sverige	Sweden	IT Services	Denmark, Finland, Norway, Sweden
Postnord Stralfors	Sweden	eInvoice, Orders, Supply Chain, PEPPOL	Denmark, Finland, Norway, Sweden

## APPENDIX 1 Continued: Members list of EESPA

TrustWeaver	Sweden	Cloud-based compliance for e-invoicing and e-archiving	Global
Swedbank	Sweden	Financial Institution	Estonia, Latvia, Lithuania, Sweden
PostFinance	Switzerland	Banking, Payment Services, Digital Services	Switzerland
Swisscom	Switzerland	Procure2Pay/Order2Cash' services: E-Invoicing, E-Procurement, Scanning2E-Invoicing, PDF2E-Invoicing, Invoice-Workflow, Archiving	Switzerland
SIX Paynet	Switzerland	E-Invoicing B2C/B2B Consulting: Banking, Healthcare, Pharma, Real Estate, Retail, Utilities	Switzerland
Abacus	Switzerland	ERP software, E-Invoicing	Germany, Liechtenstein, Switzerland
LOGO eBusiness Services	Turkey	eInvoices, eTransactions, B2B, B2I, Supply Chain Execution, Interoperability	Romania, Turkey, WW
Foriba	Turkey	Digitalization of financial and accounting processes.	Turkey
OpenText	United Kingdom	Business to Business (B2B) and Business to Government (B2G) integration through EDI/XML for business transactions.	World Wide
Taulia	United Kingdom	Financial Supply Chain solutions	Bulgaria, Germany, United Kingdom, USA
SAP Ariba	United Kingdom	Solutions for Supply Chain, Finance, Procurement	World Wide
Tungsten-Network	United Kingdom	Global Compliant B2B e-Invoicing provider and associated added value services	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Turkey, USA, Asia, World Wide
catalog360	United Kingdom	Cloud-based eProcurement catalogues, punchout and eInvoicing solutions	United Kingdom, USA

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**APPENDIX 1 Continued: Members list of EESPA**

TrustWeaver	United Kingdom	Causeway's Tradex eInvoicing software enables supply chain partners to electronically send and receive trading documents such as invoices, requisitions and purchase orders.	United Kingdom, Europe, Middle East, India, Australia, Canada, USA
Data Interchange	United Kingdom	Electronic Data Interchange (EDI), eBusiness integration, PEPPOL, purchase-to-pay and e-Invoicing solutions	Germany, Poland, Spain, Sweden, United Kingdom, USA
IBM	USA	B2B integration, value chain connectivity and collaboration, and supply chain analytics	WW

## APPENDIX 2: Survey questionnaire from QuestionPro platform

Questions marked with a \* are required

### Survey about e-invoice operators interoperability cooperation

Dear service provider,

You have opened a research survey about interoperability cooperation among e-invoicing service providers.

The survey is part of my MBA thesis research at the University of Tartu, Estonia and I am very pleased to have the support of the EESPA Executive Committee in conducting the survey.

Your responses to the questions in the survey will help to clarify and understand the main motivators/enablers and disadvantages/barriers in interoperability cooperation. I would be most grateful if you would share your opinions and experiences.

Your contribution to answering the questionnaire will be highly appreciated and important in order to provide representative results. All information gathered during the survey is confidential and will not be attributed to specific individuals or companies. EESPA will be able to use the findings in assessing its development path for interoperability. The results will be presented in a generalized form.

The questionnaire is divided into 4 parts and takes about 10 - 15 minutes to answer.

If you have questions at any time about the survey or the procedures, you may contact the survey researcher Vivian Maripuu at the mob. +372 52 68 968 or by e-mail: vivian.maripuu@gmail.com

Thank you very much for your time and support!

Please start with the survey now by clicking on the Next button below.

\* 1.1. Do you have operations in more than one country?

- Yes
- No

\* 1.2. Do you have customers in more than one country?

- Yes
- No

\*

1.3. How many interoperability cooperation agreements with other e-invoicing service providers does your company currently have?

- We don't have any
- 1 - 10
- 11 - 20
- 21 - 30
- More than 30

\*

1.4. What is the main motive for your company to start interoperability cooperation and projects? Mark all that apply

- Our customer request – that is the main motivator
- Other operators' or their customers' request
- Internal strategic decision to gain competitive advantage and broaden our network
- Other

## APPENDIX 2 continued: Survey questionnaire from QuestionPro platform

\* 1.5. Does your company use interoperability agreements mainly for serving your supplier customers or buyer customers or both?

- Mainly **supplier** customers
- Mainly **buyer** customers
- Equally **both**, supplier and buyer customers
- Other (please explain)

\*

1.6. How competitive are you with e-invoice service providers, with which you interoperate?

- Highly competitive
- Somewhat competitive
- Complementary Service Providers
- Other (please specify)

\* 1.7. Does your company exchange other electronic business documents under interoperability agreements apart from e-invoices?

- No
- Yes (please name what kind of documents?)

\* 1.8. Which are the most widely used electronic document standards used by your company?

Mark all that apply

- Domestic standard
- EDIFACT
- UBL
- UNCEFACT / CII
- PEPPOL BIS
- Other

1.9. How would you rate the maturity of your technical interoperability channels on a scale of 1 - 5?

Where 1 = custom developments needed for every new channel and 5 = reusable protocol and channel setups are optimized ("plug and play")

1 Custom developments

5 Reusable protocol

\* Maturity of  
interoperability  
channels

## APPENDIX 2 continued: Survey questionnaire from QuestionPro platform

\* 1.10. Is your company a PEPPOL access point?

- YES
- NO
- NO, but we are going to be within next 18 months

### Advantages of interoperability cooperation with other service providers

2.1. Please indicate your opinion regarding the following statements about interoperability cooperation that apply to your company.

Cooperation and interoperability with other service providers ...:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
* ... creates <b>economic benefits</b> in revenue growth and cost reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... brings <b>more customers and new business opportunities</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... gives <b>competitive advantage</b> in our home market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... <b>increases customer satisfaction</b> about our services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... gives our company <b>access to new markets</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... <b>improves our company's public reputation</b> (e.g. shows us as an innovative and leading service provider)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... increases our <b>market penetration and broadens our market coverage</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... helps us to <b>educate market and increase awareness</b> about electronic document exchange benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... <b>influences industry dynamics</b> in general by promoting re-usable technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.2. If you have any further views about the motives of interoperability, please complete the textbox here:

### Disadvantages and barriers to interoperability cooperation

## APPENDIX 2 continued: Survey questionnaire from QuestionPro platform

**3.1. Please indicate your opinion regarding the following statements about possible disadvantages of interoperability cooperation: how do they apply to your company?**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	N/A
* Interoperability connections are <b>not profitable</b> (high set-up, legal and maintenance costs, too little revenue)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Interoperability gives us <b>challenges in presenting the price</b> of our services to customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* We are <b>forced</b> to do interoperability otherwise we would <b>lose some customers</b> to our competitors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Our company has faced <b>imbalanced knowledge and expertise</b> (e.g. related to compliance): we have to share more knowledge and expertise than we gain value in return	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Our company has encountered <b>opportunistic behavior</b> from cooperation partner (opportunism= taking advantage of circumstances with self-interested motives)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**\* 3.2. Please rank what do you consider the biggest barriers to interoperability with other service providers?**

Drag your choices here to rank them

Establishing connectivity

Technical syntax

Data formats

Compliance issues

Legal agreements

Choose at least 3 choices to rank them

**3.3. Please indicate your opinion about possible barriers to interoperability cooperation. How has your company experienced them?**

	Not a barrier	Low barrier	Average	High barrier	Very high barrier	N/A
* The issue of <b>different connectivity protocols and data formats</b> in technical interoperability connection setup (e.g. other service provider has no capability to the connection types we can do and vice versa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* The issue of <b>openness in negotiations</b> : cooperation partner is not willing to share necessary information (both technical and legal/business)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* The issue of different <b>business models</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* <b>Communication</b> about legal matters and technical interoperability take too long and too much effort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3.4. What kind of other issues (if any) have you encountered in interoperability cooperation that you would consider as a disadvantage or barrier?**



## APPENDIX 2 continued: Survey questionnaire from QuestionPro platform

4.1. Please indicate your opinion regarding the following statements about knowledge sharing and innovation that apply to your company.

Interoperability and cooperation with other e-invoice service providers has ...:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
* ... given our company the opportunity to <b>share our knowledge and expertise</b> with our cooperation partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ...made our company to <b>learn from cooperation partners</b> and develop more advanced technical solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... encouraged our company to <b>redesign our services</b> with business benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... encouraged our company to <b>create and implement new technological solutions</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* ... encouraged our company to implement <b>new standards and formats</b> for electronic document exchange	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 4.2. Please rank in the order of importance the following statements about motivators and enablers of interoperability cooperation that apply to your company:

Drag your choices here to rank them

Interoperability is with strategic importance to our company

Interoperability cooperation helps to improve common technical standards and introduce new technologies

Interoperability cooperation helps our company to be more innovative in terms of technical solutions

Environmental impact through our services (electronic business documents save paper and forests) is one of the motivators to do interoperability cooperation

Openness (sharing information, accountability and consensus orientation) is a key success factor in the cooperation with other service providers

We do Interoperability for to meet better our customers' requirements and needs

Choose at least 4 choices to rank them

## APPENDIX 2 continued: Survey questionnaire from QuestionPro platform

4.3. Please indicate your opinion about the following statements regarding influence of EESPA and cooperation support provided them:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
* EESPA influences industry dynamics by promoting best practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Belonging to EESPA supports our company's <b>competitive advantage</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* EESPA membership has been useful in terms of <b>communication</b> with other (potentially new) interoperability partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Belonging to EESPA supports our company's <b>competitive advantage</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Cooperation framework support provided by EESPA is <b>useful for our company</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* EESPA model interoperability agreement drafts <b>reduce our legal costs</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 4.4. How has or will the EU Directive (2014/55/EU) and EN 16931 about e-invoicing in public procurement influence your company and business? Mark all that apply to your company

- It has influenced us to establish more interoperability connections with other service providers
- It will increase competition among e-invoicing service providers
- Our company has gained/expects to gain more customers
- Our company has lost customers
- It has not influenced us
- Other (please specify)

4.5. Please specify how does your company use EESPA model agreements:

	Yes	No	Maybe
* Does your company rely on <b>proprietary or legacy interoperability agreements</b> ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Does your company use <b>EESPA MIA</b> ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Does your company plan to transfer proprietary/legacy agreements to <b>EESPA MIA or MIFA</b> ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Is your company planning to move to <b>EESPA MIFA</b> ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4.6. What are in your opinion the enablers of interoperability cooperation, both from business and technical perspective (anything more to add to previous statements)?

What kind of support would you need more form EESPA organization?

### **APPENDIX 3: Description of research process**

**2017 October** the author started negotiations with the EESPA Executive Committee member, Ahti Allikas who is representing one of the biggest Nordic e-invoice service providers OpusCapita and known to the author through the interoperability cooperation between Estonian service providers and Estonian Association of Information Technology and Telecommunications (officially abbreviated as ITL), by presenting the research idea. It was well received and as the next step it was agreed that Ahti Allikas will present the idea in EESPA Executive Committee meeting in 10<sup>th</sup> of November with aim to get permission to present the research proposal on the big all members taking place in the end of November.

**2017 November** author prepared written research proposal to be presented on EESPA general meeting (GAM) in Brussels on 30<sup>th</sup> of November to all the EESPA members. In the Executive Committee meeting on November 10<sup>th</sup> the feedback was positive but no further questions were asked. The next committee meeting took place one day before general meeting, 29<sup>th</sup> of November and there the written proposal with short presentation was introduced by Ahti Allikas. It brought first setback: committee got interested about what kind of questions will be asked, how and by whom. As a result permission to present the proposal to all EESPA member was not granted. However, it was agreed that the author will prepare the questions and survey, present them for Executive Committee approval and if needed, the amendment request will be made and when everything is finalized, the secretary of EESPA will send the questionnaire out with the foreword of EESPA support and recommendations. Also, it was stated that no contact information can be shared to the author for distribution of the survey questionnaire.

**2018 January – February** analyses and systematization of the cooperation theoretical background literature was done

**2018 February:** in the beginning of month the questionnaire was created based on theoretical literature and authors industry knowledge gathered within 4 years' of experience as partner relations manager by Baltics biggest EDI and e-invoice service provider, and managing several international interoperability cooperation projects. First draft of questionnaire was created as Google document and sent for content and question types format review to 2

people, first to EESPA executive board member and after implementing corrections based on feedback, the second review was done by a colleague on chief technology officer position. After the feedback to questionnaire content and corrections the online survey platform Google Forms was chosen and online survey form created in the middle of February. Visual result of matrix type questions seemed unsatisfactory, and priority ranking questions could not be implemented, but still the questionnaire got created and tested on one person with the hope that this free of charge platform could fulfil the goal. Unfortunately feedback received proved more (unexpected) limitations, like the language settings of respondent web browser will affect the questionnaire language and some other shortcomings. In conclusion, Google Forms proved unsuitable for the research survey to this audience as it did not look professional, question types, data analyses reports and tools were too limited. Author started immediately to look for other options among different survey platforms which could meet the requirements and expectations. After investigating of several different platforms QuestionPro platform was selected, paid subscription made and the survey questionnaire “built” into the platform. It responded to all the needs and requirements, both functional, visual and also analytical.

**2018 March:** in the first days of March, the new questionnaire with cover letter for presenting it to EESPA was sent for piloting to Ahti Allikas. Some minor format changes were still need to achieve a professional outcome and on March 6<sup>th</sup>, the questionnaire got introduced to EESPA secretariat by Ahti Allikas with the introduction for review. Author continued the discussion later on directly with EESPA secretariat. After a week, the first communication took place and 3 days later the online meeting was held with Charles Bryant, Secretary General of EESPA and Dora Cresens from EESPA secretariat in Brussels. Thorough feedback was received both, to content and format: major restructuring of the questionnaire was required together with some content and wording changes. For the big surprise of the author, it turned out, that some topics covered in the questionnaire were sensitive for EESPA community and wordings of the questions too straight forward (for example possible pressure in pricing due to interoperability). Another big topic was the requirement of total confidentiality. Initially, in the questionnaire background questions there was asked the name of the company and country of company’s headquarter, also if the

company is multinational with the purpose to see if and how those aspects matter in the opinions and influence approaches. All these questions were asked to be left out of survey. Restructuring was suggested from 5 sections altogether (1.background questions, 2.advantages of interoperability cooperation, 3.disadvantages of interoperability cooperation, 4.enablers and motivators and 5. Barriers in interoperability cooperation), to 4 sections: disadvantages and barriers sections had to be united, so that the survey would bring out less negative topics and emphases would be more on questions regarding positive side of interoperability cooperation. Apart from content feedback other very important topics for EESPA were discussed on the meeting: intellectual property rights of the, confidentiality and signing of non-disclosure agreement (NDA). This is something that the author did not foresee when planning the research that this kind of questions and issues could arise and signing of an NDA will be required, and that the value of received information could be something more than academic purpose and good feedback to organization itself. Preparation and signing the NDA took time, which was not planned into research schedule. Finally, the questionnaire link was sent out by EESPA secretariat to 65 EESPA full member companies a day before Easter in the end of March. As in Europe it is common, that Easter time is connected with longer holidays, then questionnaire had to stay open for responses longer than planned, until 25<sup>th</sup> of April.

**2018 April:** collection of responses to the survey.

**2018 April – May:** analyses of electronic survey responses

**2018 May:** summarizing the results of survey and writing conclusions.

## APPENDIX 4: Research proposal to EESPA

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### Research about interoperability among operators

for master thesis in University of Tartu, Estonia by Vivian Maripuu

#### GOAL

The theses aims to contribute to **enhancing the operators interoperability and cooperation** by:

- 1) finding out what are the main barriers and obstacles for cooperation and interoperability,
- 2) making specific proposals for possible solutions to found issues.

#### OVERVIEW

Research task is to find out:

- How many e-Invoicing / EDI operators are doing interoperability cooperation;
- What are the main motivators and stimulating factors for interoperability cooperation;
- What are the benefits of international cooperation between operators;
- Which are the obstacles and main barriers for cooperation and interoperability.

#### TIME & METHOD

- **January - February 2018:** conduct the survey in written electronic questionnaire form
- **March - April 2018:** analyses of the answers
- **May - June 2018:** presenting the results, summary and proposals to participants.

#### WHY?

The expected result is to clarify what are the main issues and barriers for operators in (international) interoperability, what could be the possible solutions and how to target them.

Increasing the awareness and addressing the topic should **benefit cooperation between all operators** and thus help to increase the spreading of e-documents.

**We kindly ask for active participation in the research!**

**The survey will be sent out in electronic form within the first half of January 2018 to all EESPA members via e-mail. Answers are expected back by the end of February 2018.**

#### About Vivian Maripuu

Master student from University of Tartu in master program Entrepreneurship and Technology Management. Professional career has been engaged with IT sector the past 7 years starting in Columbus Estonia as a project manager and the past 4 years in Telema AS, the leading EDI operator in Baltics as Partner Relations Manager. Duties include being responsible for international roaming/interoperability projects and agreements.



#### About University of Tartu

Established in 1632, University of Tartu (UT) is Estonia's oldest, largest, most prestigious university and leading centre of research. UT is ranked 400th in the world - making it the top-ranked university in the Baltic States. UT has 13,400 students, including 800 international students.

## RESÜMEE

### E-ARVE TEENUSEPAKKUJATE KOOSTALITLUSVÕIME: KONKURENTS-KOOSTÖÖ STRATEEGIA EUROOPAS

Vivian Maripuu

Reaalajas majanduse ja digitaliseerimisega seotud innovatsioon on viimasel kümnendil olnud peamiseks Euroopa Liidu (EL) liikmesriikide ja laiemalt maailma majanduse edasiviivaks jõuks. Reaalajas majandus (inglise keeles *Real-Time Economy*, lühendina RTE) kui uue paradigma kontseptsioon seisneb selles, et kõik äritegevuses osalejate vahelised toimingud leiavad aset digitaalselt, genereeritakse automaatselt ja realiseeritakse reaalajas ilma inimese poolse sekkumiseta (Penttinen 2008). RTE „ehitusplokkide“ hulka kuuluvad muuhulgas reaal-ajas pangamaksed (SEPA), e-arveldamine, e-riigihanked ja automaatne maksuaruandlus. Erasektori kasud reaalajas majandusest on äriprotsesside tõhusamaks muutumine, kulude vähendamine, loodud lisandväärtuse ja kasumi suurendamine. Avaliku sektori jaoks võimaldab RTE vähendada varimajandust, suurendada maksude laekumisi ja majanduse läbipaistvust (Harald 2018; Koch 2017).

Elektroonilise andmevahetuse (inglise keeles *electronic data interchange*, lühendina EDI) teenusepakkujaid on vaja, et võimaldada tehingupartnerite vahelist elektroonilise äriinfo

liikumist, tõlkimist, töötlemist ja õigetele kaubanduspartneritele edastamist. Tuginedes Bruno Koch'i Billentise aruandele<sup>9</sup>, on ainuüksi Euroopas rohkem kui 10 000 erinevat majandustarkvara (inglise keeles *Enterprise Resource Planning system*, lühendina ERP), mis kõik „räägivad erinevat keelt“. Selleks, et edastada äriinfot tarkvarasüsteemide vahel automaatselt ja ilma inimese sekkumiseta, ongi vajalikud EDI operaatorite teenused. EDI võrgustik on oma olemuselt lisaväärtusteenuseid pakkuv teenusvõrk (inglise keeles *Value Added Network*, lühendina VAN).

EDI ja e-arve teenusepakkujad keskenduvad peamiselt elektroonilisele andmevahetusele tarneahelaga seotud protsessides, kuid ka finantsprotsesside automatiseerimisega seotud teenuste osutamisele. Igal teenusepakkujal on oma võrgustik, mille liikmete vahel toimub elektrooniline andmevahetus. EDI ja e-arvelduse teenusepakkujate koostalitlusvõime (inglise keeles *interoperability*) võimaldab eri operaatorvõrkude klientidel vahetada elektroonilisi äridokumente võrgustike vahel. Koostalitlusvõime ehk rändluse saavutamiseks peavad omavahel konkureerivad operaatorid tegema koostööd. Samaaegselt aset leidva konkureerimise ja koostöö nähtuse nimetus inglise keeles on *coopetition*, millele magistritöö autorile teadaolevalt eestikeelset vastet polegi. Nimetagem seda antud resümees konkurents-koostööks.

Magistritöö eesmärgiks oli välja selgitada, millised on e-arve teenusepakkujate vahelise rändluskoostöö eelised, puudused, soodustavad ja takistavad tegurid. Töö eesmärgi saavutamiseks seati järgmised uurimisülesanded:

- avada konkurents-koostöö sisu ja avaldumisvormid (peatükk 1.1).
- selgitada konkurents-koostöö eeliseid, puudusi, soodustavaid ja takistavaid tegureid ettevõtete-vahelistes suhetes äriühingute tasandil (peatükk 1.2).
- tutvustada elektroonilise andmevahetuse (EDI) konkurents-koostöö konteksti, empiirilise uuringu meetodikat, uurimisprotsessi ja valimit (peatükk 2.1).

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<sup>9</sup> Billentise aruanne on iga-aastaselt välja antav juhtiv eksperthinnang e-arvelduse kasvavaks kasutuselevõtuks sisaldades turuülevaateid ja prognoose ning üksikasjalikke riigi- ja piirkonnapõhiseid analüüse. (Autori märkus, <https://www.billentis.com> põhjal)



- tuginedes kvantitatiivse uuringu tulemustele, analüüsida konkurents-koostöö eeliseid, puudusi, soodustavaid ja takistavaid tegureid EESPA ühingu liikmete hulgas (peatükk 2.2).

*European E-Invoice Service Providers Association*, lühendatult EESPA, on Euroopa juhtivaid e-arve teenusepakkujaid ühendav katusorganisatsioon, mille eesnägiks on läbi oma tegevuse aidata kaasa e-arvete laialdasemale kasutuselevõtule. Tegevuste fookuses on paremaks koostalitlusvõimeks eelduste loomine läbi Euroopa Liidu tasandil kaasa aitamise riiklike poliitikate kujundamisele. Lisaks toetatakse oma liikmeid ühise koostööraamistikuga.

E-arve teenusepakkujate koostalitlusvõime ja koostöö on vajalikud lõpp-klientide vajaduste ja üldise turunõudluse rahuldamiseks. Praegused probleemid seisnevad ärimudelite erinevustes, raskustes tehnilise ühilduvuse saavutamisel, kasutatavate standardite rohkuses ja teenusetasemete erinevustes.

Teema aktuaalsus on seotud samuti ELi direktiiviga 2014/55 / EL, mis jõustub 2019. aastal ja muudab e-arved kohustuslikuks avalikule sektorile avalikes hangetes. Direktiiv on juba sisse viidud EL liikmesriikide seadusandlustesse. Eeldatavasti suurendab see turunõudlust e-arvete rändluse järele, mis omakorda suunab teenusepakkujad omavahelisele koostööle.

Teoreetilises osas selgitas autor, et konkurents-koostöö põhieesmärk on luua vastastikku kasulikke partnerlussuhted teiste ettevõtetega, sealhulgas konkurentidega. Näiteks ettevõtted loovad strateegilisi koostööliite tootearenduseks ja innovatsiooniks, et kaasa aidata uute, innovatiivsete toodete / teenuste loomisele ning uutele turgudele sisenemisele või lausa uute turgude loomisele, samal ajal aga konkureerides edasi oma olemasoleval turuosal pakutavate toodete ja teenustega. Konkurents-koostöö ärisuhete erinevaid avaldumisvorme saab kirjeldada kahel viisil: esiteks, konkurents-koostöö suhetes olevate osapoolte arvu järgi (kahepoolne, kolmepoolne, mitmepoolne); ja teiseks, majandustegevuse järgi väärtusahelas: kas horisontaalne või vertikaalne koostöösuhe konkurentide vahel. Konkurents-koostöö võib toimuda ettevõtte perspektiivist lähutvalt neljal tasandil: individuaalne (üksikisiku) tasand, ettevõttesisene / organisatsioonitasand, ettevõtetevaheline tasand ja äriõrgustiku tasand.

Strateegiliste äri võrgustike tasandil on teoreetikute arvates konkurents-koostöösuhete eelisteks: majanduslik kasu kulude ja riskide jagamisest partnerite vahel uutele turgudele sisenemisel, ühine innovatsiooni- ja arendustegevus uute toodete ja teenuste väljaarendamisel, oma valdkonna tehnoloogiate ühine täiustamine ja dünaamika mõjutamine. Konkurents-koostöö varjuküljed on võimalik oportunistlik (omakasupüüdlikkus), konkurentsieeliseks olevate unikaalsete teadmiste lekitamine konkurendile, konkurentsieelise kaotus ja partnerlusest sõltuvaks jäämine ohustades seeläbi oma turupositsiooni. Koostöö soodustajateks konkurentidega peeti võimalust partneritelt õppida ja kompetentsid ühendada, ligipääsu konkurentide teadmistele ja ressurssidele, avatust koostöösuhetes ja ühiseid ärilisi eesmärke. Koostöö takistusteks osutusid: erinevused ärimudelites, koostalitlusvõimega seotud takistused erinevatel tasanditel, usalduse puudumine ja liiga kõrged koordineerimiskulud. Teoreetilise osa peatükk lõppes kontseptuaalse nelinurk mudeliga, mis sai aluseks empiirilisele uuringule. Mudeli alusel uuriti konkurents-koostöö nelja aspekti – mis on konkurents-koostöö eelised, puudused, soodustavad ja takistavad tegurid e-arve teenusepakkujate hulgas.

Empiiriliste uuringutulemuste analüüside põhjal jõudis autor järeldusele, et e-arve teenusepakkujate konkurents-koostöö peamiseks motivaatoriks on klientide vajadused ja koostöö tulemusel avanevad uued äri võimalused. Samuti peavad teenusepakkujad oluliseks koostöö abil saavutatavat konkurentsieelist. Üllatuslikult selgus, et suuremate ja rahvusvaheliste teenusepakkujate puhul on rändluskoostöö vähem kasulik kui riiklikul tasandil tegutsevatele teenusepakkujatele. Seda võib selgitada asjaoluga, et suurematel rahvusvahelistel operaatoritel on juba mitmes riigis esindused ja seega on nende vajadus täiendava rändluskoostöö ja -ühenduste järele väiksem. Suurimad takistused koostööks teiste teenusepakkujatega on uuringu analüüsi põhjal erinevused ärimudelites ja elektroonilise andmevahetuse spetsiifilised tehnilised vastavusprobleemid. Lisaks peeti takistuseks ka uute rändluskanalite loomise ja koostöö koordineerimise liigset kulukust ja vähest tulusust. Veel tuli uuringust välja, et koostöösuhetes ilmnes oportunistlikku käitumist partnerite poolt kasutamaks ära oma jõu positsiooni.

Uuringu kokkuvõtteks võib öelda, et vaatamata takistustele, peetakse EESPA liikmete hulgas koostööd teiste teenuspakkujatega strateegiliselt oluliseks, kuna see võimaldab saavutada klientide rahulolu, saada konkurentsieeliseid ja ligipääsu rahvusvahelistele ja uutele turgudele. Lisaks pidasid uuringus osalejad oluliseks ka uuenduslike tehniliste lahenduste koostööd ja ühiste teenusstandardite parendamist.

Seega täitis käesolev magistritöö oma eesmärgi ja läbi uurimisülesannetele vastuste leidmise panustas konkurents-koostöö uuringutesse strateegiliste äriühingute tasandil.

Kuna antud uuring teostati EESPA poolset rangelt konfidentsiaalsuse nõudel anonüümselt, siis puuduvad autoril andmed mitmed olulised ettevõtteid iseloomustavad andmed. Edasised uurimisküsimused võiksid olla näiteks: kas ja kui palju mõjutavad ettevõtte suurus, kohalolu erinevates riikides, rändluskoostöö partnerite arv ja ettevõtte päritoluriik suhtumist ja võimekust konkurents-koostöökas teiste teenusepakkujatega.

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Mina, Vivian Maripuu,

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Tartus, **25.05.2018**