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**STUDENT CO-OPERATION BETWEEN UNIVERSITIES AND COMPANIES: CASE
OULU**

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| Abstract | | | |
| <p>This thesis focuses on university–industry collaboration, and especially on student co-operation between companies and universities. Student co-operation in this study covers all university–industry interactions that fundamentally relate to students. The thesis aims to find out the key aspects that play a role when companies engage in student co-operation with universities. Also, students’ perceptions of these collaborations are investigated. Additionally, the role of faculty personnel is looked into, as much of educational collaboration includes them, too. University of Oulu is used as a case university, but the topic itself is universal and the findings contribute to the existing literature of university–industry collaboration, either by confirming what is already known, or at times creating new knowledge. It must also be noted that the literature regarding student co-operation (instead of university–industry collaboration in general) is rather scarce, which adds to the significance of the results of this thesis, also (and especially) in the Finnish context.</p> <p>To achieve the goals of the research, eight companies that collaborate with University of Oulu were chosen and their representatives were interviewed. Data collection for the student and staff perspectives was done through qualitative surveys.</p> <p>During the analysis process, five themes emerged as key aspects of student co-operation. The themes are: recruiting, branding, communication, influence & learning, and social responsibility. Additionally, the role of student associations as well as the role of career days are important, as they act as major touchpoints between companies and students. Especially recruiting and branding are important motives for companies to engage in student co-operation. While students perceive these activities rather positively in general, the results reveal that there are areas of development companies may not be aware of. Also, the role of communication is crucial for the realization of collaboration. At the time of writing, most companies perceived that it is not on the level it needs to be. Many companies also emphasized the role of responsibility as an integral part of collaboration. This is an aspect much of prior research omits, and the emergence of it itself acts as one of the findings of the study.</p> | | | |
| Keywords University-Industry Collaboration, Cross-Sector Collaboration, Student Co-Operation | | | |
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1 INTRODUCTION

Universities and companies have a common interest to engage in collaboration with one another. This collaboration can take various forms, such as research co-operation, student or graduate co-operation, spin-offs, consulting, and so forth (see e.g. Schartinger, Rammer, Fischer & Fröhlich, 2002; Perkmann & Walsh, 2007; Wright, Clarysse, Lockett & Knockaert, 2008). Essentially, any type of collaboration is beneficial for both parties. Companies are receiving state-of-the-art knowledge and technology (Dooley & Kirk, 2007), and universities are fulfilling their so-called “third mission”; interacting with, and contributing to, the society in various ways other than teaching or research, which are the traditional roles of universities (Jongbloed, Enders & Salerno, 2008; Haataja, Hautamäki, Holm, Pulkkinen & Suni, 2018, p. 7).

This thesis provides its own contribution to university–industry research literature, but perhaps from a different point of view than most studies: industry experiences on *student co-operation*. Additionally, emphasis is given on the perceptions of students, as they are a central part of this kind of co-operation between universities and companies. The following introductory sub-chapters provide further reasoning for the need of this type of research as well as explain the background of the present study. Also, the methodology and the implementation of the empirical research are introduced.

1.1 Background and justifications of the study

A vast amount of research has been done on university–industry collaboration. As new innovations are seen as crucial for economies, an extensive amount of literature focuses on different types of collaborations leading to knowledge and technology transfer. To a large extent, the research on the topic seems to focus on research collaboration, patents, and spin-offs. While collaboration related to students has been included as part of the research and its existence has been noted, it has not been at the center of attention. (see e.g. D’Este & Patel, 2007; Mascarenhas, Ferreira & Marques 2018; Perkmann & Walsh, 2007) However, one of universities’ main objectives, besides research, is teaching and sharing knowledge to their students (Jongbloed et al., 2008). With such vast potential of educated future workforce, it is interesting that so

little research has been done on what it is exactly that companies want from universities with respect to students, and how they see students as a collaborative resource between companies and universities.

Indeed, students are not just some passive actors somewhere in the background of the university environment. Instead, students are key stakeholders of the university along with governments and businesses. Additionally, students can even be seen as customers of the university. (Jongbloed et al., 2008) On the other hand, students and the skills they possess are the “products” of university education (Tynjälä, Slotte, Nieminen, Lonka & Olkinuora, 2006, p. 74) and they are the driving force behind actions of many external stakeholders of the university, such as companies (Jongbloed et al., 2008). This initial setting, along with the fact that student co-operation takes place but has been mostly neglected in the literature, proves that there is more to be done and contributes to the motivation of this research.

The importance of the topic also came up in discussion with University Innovation Centre, a joint unit between University of Oulu and Oulu University of Applied Sciences. Hence, the study is done in co-operation with University Innovation Centre, as well as University of Oulu Career Services. While the University Innovation Centre is active for example in engaging university researchers in commercializing their research, they have an interest in understanding university–industry relations regarding students as well.

The term *student co-operation* itself requires to be opened up a bit. In describing university–industry collaboration, the existing research has used various terms and concepts interchangeably, perhaps due to a lack of specific glossary. Collaboration related to students can include lots of activities, and there is not one single term that would cover all of these. Existing literature extensively considers student-centric collaboration to happen through mobility (e.g. graduates moving out of universities into companies), guest lectures provided by companies, and joint thesis supervision (Bekkers & Bodas Freitas, 2008; Schartinger et al., 2002). Perhaps excluding mobility, these are more or less educational ways of collaborating. In addition, Vihervaara (2015) outlines some very hands-on ways of collaboration in education, such as contests, company visits, case studies, and student projects.

In light of the lack of cohesiveness in terminology, the term “student co-operation” will be used in this thesis. It covers all university–industry interactions that fundamentally relate to students. This is to avoid confusion that may arise from addressing the same issue with different names.

1.2 Objectives and research design

The aim of this study is to gain an understanding of the aspects that have an impact on student co-operation, whether these aspects are related to the reasons behind collaboration or to the practical realization of collaboration. Many times, student co-operation occurs in the form of collaboration in education, as companies are active in holding guest lectures and taking part in thesis work, for example (Schartinger et al., 2002). However, this paper is not only limited to collaboration that has such an educational purpose in mind. This thesis sets out to study what aspects play a role in university–industry collaboration with respect to students. Therefore, all aspects will be treated as equal, whether they are related to collaboration in education or any other type of collaboration, as long as students are the ultimate motivation for collaborating.

Indeed, I am also interested to find out how companies wish to collaborate with universities in ways where students are not the active party. This can include activities such as having a presence at the university or participating in various fairs. In addition, this research studies how companies see different enablers and barriers of university–industry collaboration. The impacts of company actions are also studied by looking into how students perceive company activities at the university. Furthermore, the role of those university faculty members that are likely to be involved in student co-operation is investigated.

To achieve the goals mentioned above, the main research question is as follows:

- *What aspects play a key role when companies engage in student co-operation with universities?*

Since collaboration by its very definition entails mutual interaction, it is also meaningful to study the other side of the coin, which in this case equals not only the

university, but also students. Indeed, the thesis has a strong focus on students as well. This entails that students are seen as an equal party, perceptions of which the companies' actions are reflected against. The following sub-question attempts to capture the student perspective:

- *How do students perceive companies' actions at the university?*

It is to be assumed that faculty personnel of universities are involved in student co-operation, mainly collaboration in education, as for example joint supervision of thesis or a guest lecture entails the idea that a lecturer, a teacher, or a professor is involved in the practical implementation of collaboration. Because of this, they may possess knowledge and information that is not only relevant for this study, but also something that may be under the radar of official channels, such as a career services unit or customer relationship management (CRM) systems. Therefore, the second sub-question focuses on the role of university staff members:

- *How big of a role do faculty personnel play in student co-operation between companies and universities?*

As the study is done in co-operation with University Innovation Centre and University of Oulu Career Services, University of Oulu will be used as a case university in this thesis. Likewise, the companies involved in this study are collaborating with University of Oulu, specifically with respect to students.

The research is conducted using qualitative methods, interviews and surveys with open-ended questions. For the company perspective, eight companies were interviewed. The companies were chosen based on discussions with both University Innovation Centre and University of Oulu Career Services. In addition to the interviews, two open-ended questionnaires were sent out, one for all University of Oulu degree students, and one for personnel of all University of Oulu faculties.

Using multiple methods makes it easier to get a more cohesive understanding of the bigger picture (Hirsjärvi & Hurme, 2009, pp. 38–39), which serves the purpose of this

study well. As the interviewees are experts of their fields and their opinions are of interest, the interviews are conducted in a semi-structured manner (Alastalo, Åkerman & Vaittinen, 2017, p. 221). To enable students as well as faculty personnel to express their opinions in their own words, the survey questions are open-ended (Wilson, 2010, pp. 153–154). Regarding the student perspective, the aim of the survey is to get an understanding of how students perceive companies' actions that ultimately are performed with these students in mind.

As the context of the study is set in Finland, some country-specific sources are used, some of which are even quite focused on student co-operation. For example, the handbook titled *Corporate Collaboration in Education* (Yritysyhteistyö opetuksessa, one of the first works in the Finnish context) by Vihervaara (2015), outlines the practical possibilities for this type of collaboration. In a report prepared for the European Commission, Davey, Meerman, Galan-Muros, Orazbayeva and Baaken (2018a) present the state of university–business co-operation in the EU countries, including Finland. Within University of Oulu, the results of the KoKo project (Korkeammalle Korkeakouluyhteistyössä, “Higher in Higher Education”) conducted in the time period of 2015–2017 also indirectly give some insight on university–industry student co-operation. Within the project, a master's thesis (Nguyen, 2017) and a related survey were carried out, the results of which also reflect the topic of this thesis.

1.3 Structure of the study

The structure of the study is as follows. After the introduction, chapter two focuses on university–industry collaboration on a general level. The triple helix model and a brief review of cross-sector collaboration literature are presented, as they help the reader understand why actors from different sectors would come together, and what is the larger environment in which collaborations take place. The chapter also describes both university and industry perspectives on collaboration, including the motives to engage in it as well as the preconditions that either foster collaboration or stand in the way of it. After that, the common ways in which companies and universities engage in student co-operation are introduced. The chapter also addresses the learning opportunities that

company involvement provides the students with. Finally, a closer look is taken at the situation in Finland, the main cultural context of this thesis.

After the theoretical framework, chapter three describes the research design and the methods used in this study, as well as justifies the use of these methods. Chapter four introduces the findings of the study. In addition to analyzing the results stemming from separate sources of data, the findings from different sources are compared with one another, as well as with prior knowledge. Also, the existing empirical knowledge of student co-operation activities at the case university is introduced in order to get a more thorough understanding of the context of the study. Finally, chapter five picks up where chapter four left off and continues the discussion by drawing conclusions and outlining implications of the findings. Lastly, the limitations of the study are addressed and some ideas for future research are outlined.

2 UNIVERSITY–INDUSTRY COLLABORATION

Neither universities nor companies operate in a vacuum. In the global knowledge economy, the interests of universities, companies, and societies have become more and more intertwined. This type of development has increased over the last few decades, mainly due to the fact that knowledge transfer from universities to industries has become so important in fostering innovation, therefore serving governmental interests as well. (Bellucci & Pennacchio, 2016; Etzkowitz, Webster, Gebhardt & Terra, 2000; Mascarenhas et al., 2018)

The following sub-chapters provide a theoretical and contextual framework for the study. Chapter 2.1. focuses on cross-sector collaboration and the linkages that tie universities and companies together. One section is also dedicated to knowledge transfer as many collaborations revolve around the subject. Chapters 2.2 and 2.3. focus on university and industry perspectives on collaboration, respectively. Chapter 2.4. addresses student co-operation and chapter 2.5. introduces the collaborative context in Finland.

2.1 The foundations of collaboration: The triple helix model and cross-sectoral focus

Before going deeper into the details of university–industry collaboration, it is necessary to take a step back and focus on the bigger picture. The triple helix model and studies on cross-sector collaboration shed some light on the rationale of collaboration, also on a more general level. Although they share similarities, the triple helix model focuses explicitly on the interaction between academia, industry, and government, while cross-sectoral literature does not exclude any sector out of the equation. However, all three actors are often, if not always (Garrett-Jones, Turbin, Burns & Diment, 2005), included.

The triple helix model, developed as a response to the transition to knowledge-based economies, links the three actors together to create a tri-lateral innovative environment with strategic alliances between the parties. Many times, the interactions are encouraged by governments. (Etzkowitz & Leydesdorff, 2000) The model extensively

emphasizes the importance of knowledge and innovations to economic development, which explains the interest of governments. In the information society, companies are engaged in creating innovations as well, not only by using and applying university-based knowledge, but also producing knowledge of their own (Tynjälä et al., 2006, p. 74). Naturally, potential financial gain is also an incentive for companies (Siegel, Waldman, Atwater & Link, 2003). Universities, too, engage in knowledge (or technology) transfer activities to obtain financial gain. As a consequence, the triple helix model encompasses an idea of universities becoming “entrepreneurial universities” that take larger and more active role in promoting innovation activities. However, it is important to note that the point in engaging in the so called third mission activities is not to downplay the importance of the two main missions, research and teaching. The integration of the three, though, is worth considering. (Etzkowitz et al., 2000)

While the triple helix model offers some explanations of the linkages between academia, industry, and government, it does not say too much about collaborations per se. Studies on cross-sector collaboration, on the other hand, focus on collaborations from a very wide set of perspectives. As seems to be the case with these types of phenomena, explicit definitions are hard to come by. Multiple frameworks with different emphases have been developed around the concept (Bryson, Crosby & Stone, 2015). According to Bryson, Crosby and Stone (2006), cross-sector collaboration occurs when two or more organizations from different sectors share capabilities to achieve a common outcome that could not be achieved by organizations in one sector only. By sectors, they mean government, businesses, non-profits and philanthropies, communities, and the public as a whole, with Crosby and Bryson (2010) adding also foundations and higher education institutions to the list. Garrett-Jones et al. (2005), on the other hand, refer only to interactions between academia, industry, and government, when they address cross-sector collaboration. This bears resemblance to the triple helix framework. In any case, university–industry collaboration as sector-crossing activity is one form of cross-sector collaboration.

Some scholars view cross-sector collaboration extensively as means to solve public problems, such as global warming or poverty, due to its potential ability to create public value (Bryson et al., 2006; Crosby & Bryson, 2010). This is based on the idea

that the sectors can combine their characteristic strengths while compensating for their weaknesses to create value. This relates to sector failure, where the efforts of one sector are simply not enough to solve the problem. (Bryson et al., 2006) The underlying idea is that the sectors would primarily go it alone, fail, and then eventually settle for collaboration. This seems to be especially an issue with large, public problems. (Bryson et al., 2006; Roberts, 2001)

Although all university–industry collaborations do not necessarily aim to solve any extreme cases of public problems (especially in the context of this study), they nevertheless entail the intention to create public value. With that said, universities do play a significant role in solving big, global problems (Dentoni & Bitzer, 2016). The preconditions for collaboration may be, as described above, rather pessimistic at times, but collaboration does not have to be viewed that way. Indeed, there is plenty to gain for universities when they engage in collaboration for the common good, both from the societal perspective and the perspective of advancing their organizational goals (Dentoni & Bitzer, 2016).

In addition to the mentioned initial conditions for cross-sector collaboration, Bryson et al. (2006) also mention environmental factors and other antecedents, such as previous experience, affecting the formation of collaborations. As the thesis proceeds further, similar aspects show up in university–industry collaboration as well. Many characteristics of even more specific types of collaborations can be traced back to the ideas present in cross-sector collaboration or triple helix literature.

In contrast to what especially the triple helix model suggests, collaboration between universities and companies is nothing new (Geuna & Muscio, 2009). Laredo (2007), too, recognizes that universities have always been connected to the outside world, and poses an intriguing question: are research contributions and educating students and preparing them for working life *not* interacting with society? However, collaboration has become institutionalized and universities have become more directly and actively involved (Geuna & Muscio, 2009).

This institutionalization, however, mostly deals with the more formal ways of collaboration, such as activities related to intellectual property rights, spin-offs, and

research collaboration (Geuna & Muscio, 2009). Many countries have witnessed the emergence of collaborative research centres, where actors across sectors come together to carry out research (Garrett-Jones et al., 2005; Thune & Gulbrandsen, 2011). The formalization of collaboration shows within universities, too. Since universities have taken an active approach with activities that push forward their third mission agenda, they have also taken on the responsibility of managing them. Many universities have established specialized knowledge transfer organizations or technology transfer offices to handle the governance of these. If universities had established some management structures for knowledge transfer before, they mainly concerned activities such as student placements, from which the focus has now shifted away. (Geuna & Muscio, 2009) Hence, Geuna and Muscio (2009) state that there are really no governance structures for other activities than the formal ones. This is partially due to the fact that there is not a real necessity for the management of other collaboration activities, at least not in the same way as there is with formal collaboration anyway. Vihervaara (2015), on the other hand, recognizes some models for organizing educational collaboration between universities and companies, and understands the need for universities to develop these further. Organizing educational collaboration will be addressed in more detail in the chapter dedicated for student co-operation.

The rest of the chapter focuses on knowledge transfer as a central element of collaboration. Roughly put, and as the previous paragraphs show, many interactions between universities and industries are indeed about transferring knowledge (or technology). As described earlier, universities, industries, and governments have their own interests in these interactions, such as funding, financial gain, and economic growth. Knowledge transfer has become a strategic tool for these purposes. (Geuna & Muscio, 2009; Siegel et al., 2003) It would be easy to assume that the knowledge only flows from universities to industries, but knowledge transfer is a two-way process and universities are on the receiving end as well (Geuna & Muscio, 2009). The university and industry perspectives on collaboration will be analysed in more detail in the following chapters. Next, we move on to the actual process of transferring knowledge.

University–industry knowledge transfer can occur in various ways, or in other words, through a variety of different channels. A thorough list of these channels does not exist, but based on existing literature, the following channels of knowledge transfer seem to

stand out: research collaboration (such as joint research, contract research, and consultancy), student and personnel mobility, training, spin-offs, patents and licensing, informal contacts, scientific outputs (publications), meetings and conferences, and other specific organized activities. (D'Este & Patel, 2007; Bekkers & Bodas Freitas, 2008; Schartinger et al., 2002; Cohen, Nelson & Walsh, 2002)

The choice of the channel used between universities and industries depends on the type of knowledge transferred. Knowledge has different characteristics, such as tacitness and formality, and therefore some channels suit different types of knowledge better than others. (Schartinger et al., 2002) In other words, the desired outcome of the collaboration affects the choice of channel. If a company wishes to obtain tacit knowledge from the university, it may be wise to go for a channel that enables strong personal contacts, for example. If a company is afraid of appropriability problems, it makes sense to choose a channel that is formal enough to make them go away. From this perspective, choosing the channel seems to be rather straightforward.

Industry sectors play a role in channel selection, too, and so do fields of science. Schartinger et al. (2002) state that natural and technical sciences as well as manufacturing industries have a tendency to engage in research collaboration, while economics and social sciences along with service industries emphasize mobility and training. However, Bekkers and Bodas Freitas (2008) point out that it is not the sector per se that guides companies to choose a certain channel. Rather, it is the type of knowledge, the disciplinary origin of the knowledge, and to some extent individual and organizational characteristics that explain why a certain channel is chosen over another.

2.2 University perspective

In this chapter, I am going to focus on the university perspective on collaboration. Why would universities or university actors engage in company collaboration? What are the driving forces behind collaboration, and on the other hand what are the barriers that hinder it from happening? As stated earlier, public funding plays a big role. In the case of Finland, at least, collaboration is also more or less embedded in the law; universities must interact with the society according to the Universities Act of the Finnish law

(Universities Act, 1:2). Based on these very fundamental facts, the benefits of collaboration seem to be rather externally driven for universities. The following paragraphs elaborate the context in which universities operate. The context, and the logic based on which universities act, is something that companies need to understand when collaborating with universities.

First, let us take a closer look at how universities work as institutions. This helps in understanding the motivations university actors have towards their work in general. They can indeed be very different from the ones on the industry side. After all, universities and companies operate in very different cultural environments. The differences between the cultures may come up in the following cases, for example: perceptions of time, attitudes or motivations towards research topics, disclosure of research results, IP rights, and division of revenue. (Bruneel, D'Este & Salter, 2010; Dooley & Kirk, 2007)

Universities are built around academic disciplines. The developments in a given discipline guide what is in the agenda of university researchers of that discipline, and what is eventually taught to the students of that discipline. These things are also affected by the financial resources that a discipline has within the university. Moreover, universities need to draw in new students, both nationally and internationally. Some degree programs have accreditations for these purposes, and this also guides what is in the curriculum. (Jongbloed et al., 2008) Taking these factors into account, it seems that companies' wishes may have only a small significance in the bigger picture.

The reward system based on which the academic performance is measured is not very ideal from a company perspective, either. How well a researcher performs his or her work is assessed by the academic criteria of the academic community. Many times, this means the amount of publications. Meeting or exceeding the academic criteria can have an impact on a researcher's salary or status. In this sense, engaging with external partners means less time spent on research, and is thus not very rewarding. The same goes for lecturers, too. (Jongbloed et al., 2008) Their job is teaching, and everything else is additional (however, later in this thesis, lectures, whether held by lecturers or researchers, are treated as important touchpoints between academia and industry). On

an individual level, a thing to remember is that researchers do not necessarily want to interact with other parties. Many academics base their identity on their status as academics. Introducing some other activities may break cultural norms and even be a threat to their identity. (Gunasekara, 2006)

The structural and cultural differences definitely pose a barrier to collaboration, but there are also drivers or determinants within universities that make collaboration more likely to happen. Take fields of science, for example: in natural sciences, technical sciences, and economics, the probability to engage in collaboration is higher than in humanities, medicine, and social sciences (Schartinger et al., 2002). As often in cross-sector collaborations, previous experience is an important precondition for university–industry collaboration as well. Schartinger et al. (2002) state, for example, that a researcher’s previous experience in contract research acts as an antecedent for contract research and personnel mobility in the future as well. Previous experience also makes it more likely that a researcher engages in more intensive co-operation, also in wider set of channels. Other individual factors play a role too, even more so than departmental or university characteristics. However, the latter two even out the more dominant individual characteristics. (D’Este & Patel, 2007)

Regardless of conditions or circumstances that affect the likelihood of collaboration activities, there are reasons as to why universities should pursue them. Aside from public funding, research collaboration may give universities an access to other sources of funding as well. For researchers, the collaboration may give an access to new technology possessed by industries. The feedback loop of research is also faster, as university research findings can be quickly verified by industry and then sent back to the university. (Dooley & Kirk, 2007) This is valuable information for companies as well. Considering that collaboration with companies gives universities research benefits or access to additional funding, for example, industry actors can tap into that knowledge and make use of it; they know that universities, to some extent, need them. Another important benefit of collaboration for universities is that it acts as a proof that the university is contributing to the economy. Once universities can demonstrate that they are capable of collaborating, they gain leverage in the competition for public funding. (Dooley & Kirk, 2007)

All these examples are very research oriented. However, company collaboration can be beneficial from an educational point of view as well. Educational collaboration is also a place where mutual knowledge transfer occurs quite easily. It does not only provide learning opportunities for students, but also for lecturers, too. In addition, education-related collaboration may boost the profile and quality of education of a given field therefore leading to more applying students. (Thune, 2011; Ormrod, 2004)

A report done for the European Commission on university–industry collaboration (Davey et al., 2018a) points out an interesting aspect regarding the motivators of university actors. Academics who are already collaborating with companies perceive the benefits differently than the ones who are not engaged in any collaboration. For example, the academics who do not co-operate perceive contributing to the society and educational aspects more motivating for collaboration than research-related benefits. For the ones co-operating, the situation is the opposite. However, the academics who collaborate are overall more motivated towards every type of collaboration. University managers, on the other hand, also emphasize the importance of funding and educational and reputational aspects as benefits and drivers for collaboration. (Davey et al., 2018a) These types of individual factors, too, are something that companies may want to consider when initiating collaboration with universities. The next chapter moves on to address similar factors that characterize the collaborative environment in which the companies operate.

2.3 Industry perspective

This chapter focuses on the benefits of and reasons for collaboration from the industry perspective. Although these reasons are perhaps a bit clearer, as financial gain may be the ultimate motive, it makes sense to elaborate them in more detail as well. The chapter also addresses the drivers and barriers that come up when looking at collaboration from the industry perspective and sums up what can be taken away from these antecedents that are simultaneously very similar but conflicting.

Universities are places where companies can get access to scientific competence. Through collaboration, companies can tap into the state-of-the-art knowledge and technology developed (and publicly funded) in the university, as well as highly skilled

people. The benefits of collaboration in turn can help firms gain competitive advantage over their competitors. Moreover, collaboration with universities is cost-effective: universities often have research facilities already in place. (Dooley & Kirk, 2007) Educational collaboration is cost-effective as well. It is, if not free, then at least below the market price, which provides competitive advantage for the company involved. On top of this, educational collaboration is a chance for companies to start recruiting future employees: making a good impression on students and even influencing what they are being taught in the classroom. Companies also receive fresh and new ideas from students, and what is important, they receive them fast. Different timeframes or perceptions of time are often cited as one of the major barriers to university–industry collaboration, but in educational collaboration it is not necessarily the case. Educational collaboration, such as a guest lecture, can be implemented rather quickly, at least compared to research collaboration that may take up more time to plan. (Vihervaara, 2015, pp. 27–31)

Based on the above, it does seem that universities are gateways for companies to really reap the benefits of cutting-edge knowledge and technology, initial funding of which has even been taken care of by the public sector.

The European Commission report, for the most part, backs up the scientific research on these matters. For businesses, financial gain and access to new knowledge and technology are the main motivators for university collaboration, while students, though important, are not the main priority. Interestingly enough, European businesses perceive that students and universities are receiving the highest benefits from collaboration activities. As can be expected, universities and academics see that businesses are the ones receiving the highest benefits. (Davey et al., 2018a)

As is the case with universities, there are some preconditions that determine the likelihood of whether a company engages in collaboration or not. For example, the high R&D intensity of a sector and large share of medium-sized firms within a sector increase the chances of companies engaging in contract research and joint research, respectively. Regarding joint research and publications, the scientific quality of research and the reputation of a field of science increase the likelihood of companies' willingness to collaborate. (Schartinger et al., 2002) Sometimes the line between

barriers and drivers is very thin. Giones (2019), for example, finds that previous experience in one channel of collaboration may lead to more of the same, on the expense of other channels. This suggests that companies may have an either-or situation, where they engage only in, say, student co-operation or research collaboration.

While engaging in various knowledge transfer channels breaks down barriers, the number of channels itself can pose a barrier as well; bringing in more university actors, such as administrative people, can make things more complicated and lower the willingness for a company to collaborate. (Bruneel et al., 2010) Indeed, these intermediaries, such as university technology transfer offices, are a stakeholder group of their own, with their own motives towards collaboration (Siegel et al., 2003).

It has become apparent that there are a lot of different drivers (or barriers) that make collaboration more probable (or unlikely), both from the university and industry side. With so many factors involved (firm, university, individual, even the country matters too (Geuna & Muscio, 2009)), the big picture may seem a bit confusing. One thing is certain, though; the collaboration must be beneficial for both parties (Dooley & Kirk, 2007). The key to successful collaboration seems to be finding common ground. Experience plays a big role in that. Overtime, over multiple projects, firms and universities learn how to operate with one another and create mutual routines and understandings. This is important because it builds trust between the parties, and trust is one of the strongest ways to reduce barriers. (Bruneel et al., 2010) Giones (2019) identifies common drivers for both sides. A practical example could be a mutual training session that would serve as a starting point to remove biases, after which the threshold for actual collaboration will be lower.

2.4 Student co-operation

Now that we have gone through the fundamental factors underlying university–industry collaboration as well as the basic rationale from both university and industry side, it is time to focus on student co-operation and the different forms it may take.

Based on the existing literature, I have roughly divided student co-operation into three categories: collaboration in education, mobility, and other activities (such as having a stand at a university job fair or taking part in events). However, this is an artificial division and many times at least the reasoning behind them goes in parallel. Companies have short-term and long-term recruitment goals, and for example influencing the contents of study programs with the aim of affecting students' competence to prepare them for working life (Thune, 2011) blurs the lines between collaboration in education and mobility.

First, a closer look is taken at collaboration in education. This includes focusing on the development of working life skills, or generic skills, as well. Working life skills also serve as a backdrop for the next topic the chapter moves on to address, mobility (mainly traineeships and employment after graduation). Then, after a brief discussion of other student co-operation activities, the rest of the chapter addresses organizing of student co-operation.

2.4.1 Collaboration in education

Student co-operation in general, but especially education-related collaboration, easily showcases the two-way process of knowledge transfer. Although the core of university education is to pass on theoretical knowledge, universities are nevertheless preparing students for key positions in the society which require also other types of skills (Tynjälä et al., 2006, p. 84). Regardless of companies' intentions behind their engagement, collaboration in education provides students with relevant skills and competences for working life (Thune, 2011). Although it is impossible to equip students with all possible generic skills, universities should make sure that students have a chance to learn and develop their skills during their studies (Crebert, Bates, Bell, Patrick & Cragolini, 2004).

Schartinger et al. (2002), for instance, recognize guest lectures as one way of transferring knowledge between universities and industries. For students, a guest lecture can be a meaningful learning experience; it reinforces what they have learned in the classroom and provides them with subject knowledge and awareness of future career prospects. (Eveleth & Baker-Eveleth, 2009; Ormrod, 2004) The same goes for

company visits. Moreover, both are something that make students actively involved and engaged in their studies (Ormrod, 2004). Although a guest lecture is not a marketing event, it does provide the company with an opportunity to make an impression in the eyes of the students (Vihervaara, 2015, pp. 86–87). As other educational ways of collaboration, Vihervaara (2015) mentions case studies, contests, company-driven courses, and student projects. In all of these, more or less, companies receive fresh and creative ideas from students, and students receive interesting, real-life cases to ponder on.

One traditional way of educational collaboration between universities and companies is joint supervision of master's (and Ph.D.) theses. Here, the student acts as a link between the university and the firm. As personal and face-to-face contacts are important in transferring knowledge between the parties, students play a big role in maintaining that contact (Schartinger, 2002).

2.4.2 Mobility and other activities

Next, a closer look is taken at mobility, mainly traineeships and employment, and other student co-operation activities. As elaborated earlier, the division between different activities is rather artificial. Indeed, the way that existing literature treats the terminology is even confusing at times. For example, Schartinger et al. (2002), categorize thesis supervision as mobility, rather than collaboration in education. Something about the state of student co-operation in the existing research literature tells the fact that Schartinger et al. (2002) and Bekkers and Bodas Freitas (2008) categorize “training” as collaboration in education, but by “training” mean the training given to firm members by the university. In a more student-centric manner and more suitably for the purposes of this thesis, Perkmann and Walsh (2007) and Vihervaara (2015) see training also as a “traineeship” (though under the headlines of mobility and collaboration in education, respectively).

Categorizations aside, a traineeship, or an internship, is a great learning experience for students. It also prepares them for their future careers, as they get a glimpse of the realities of working life, which may not entirely match with their earlier expectations. Employers understand the value of this “preparation” as well. They also get to preview

their potential future employees. (Gault, Leach & Duey, 2010) In addition, as companies wish to influence students while they are still students (Thune, 2011), a traineeship at the specific company seems to provide firms with the perfect opportunity for that. Ultimately, an internship makes it easier for students to market themselves and obtain a full-time job (Gault et al., 2010). Universities themselves benefit as well, as the relationships between universities and the business community develop along with internship programs (Gault, Redington & Schlager, 2000).

Students, for their part, see a traineeship also as an opportunity to learn working life skills. Like a guest lecture, it reinforces what they have learned about generic skills in the classroom and enables them to analyse their experiences with an academic supervisor as well as a workplace supervisor. (Crebert et al., 2004)

Taking this one step further from traineeships, Cranmer (2006) finds that student co-operation between universities and industries is contributing to students' employment. Whether it is training or engaging in designing or delivering courses, the company involvement provides students with abilities to find their first entry level job. Later on, as the graduated students have gained some work experience, the student co-operation or the lack of it does not really play a role in students' abilities of finding a job. (Cranmer, 2006) Students, indeed, tend to see working life skills as something that help them get employed, which is theoretically only a narrow view on working life skills (Tyman, 2013). Working life skills can be addressed from a very wide viewpoint, and according to Jackson (2014), it is a shared responsibility of universities and employers to make sure that students' skills meet industry standards; many times they do not. Crebert et al. (2004) share similar opinions and also ponder on the idea of whether or not employers even necessarily know what kinds of skills to expect from a recent graduate.

Student co-operation does not always have to be so educational, and this thesis also categorizes other activities, such as simply having presence at the university, as student co-operation. The "other activities" category is consciously left a bit open, since these activities could cover basically anything, and it would not be meaningful to exclude any interactions. With that said, companies should be very careful before planning on having presence at the university, educational collaboration included. Jaidi, Van

Hooft, and Arends (2011) find in their study that having presence on campus does not really have an impact on students' intentions of pursuing jobs. The impact, if there is any, may even be negative, since students may not like to be overly exposed to companies at campus. Moreover, on-campus presence may not have much of an impact on students who are still at the early stages of their job pursuit process. Indeed, those students may evaluate that they are not the right fit for the companies in question, which can have negative effects. However, when the graduates are further in their quest for finding a job and have more knowledge on potential employers, then their pursuit decisions may be affected by companies' on-campus presence. (Jaidi et al. 2011)

2.4.3 Organizing student co-operation

The final form that collaboration takes depends on many factors, such as the relationship between industries, universities, and departments, for example. Some collaborations are more organized than others and sometimes formal and informal collaboration can take place simultaneously. (Thune, 2011).

Vihervaara (2015) describes some of the most common models of organizing collaboration in education. Perhaps the most common of all is a model where collaboration happens between a single university teacher/academic and a company representative. For universities, it is a very easy, low-threshold model that is mainly based on the personal relationship between the two. (Vihervaara, 2015 pp. 50–53) One could well argue if it is a consciously created structure, or rather just a current state of affairs brought about as a result of doing nothing at all. From the company perspective, this type of model is not the most ideal, unless they have personal contacts at the university. The model does not provide companies with any means of finding the right person within the university, a task which is easier said than done. In addition, if the collaboration does take place, it does not necessarily develop any further, nor it is of benefit to anybody else. Indeed, nobody may even know about the collaboration except for the two individuals. (Vihervaara, 2015 pp. 50–53)

Naturally, student co-operation can be more formal, or structured, as well. Thune (2011) finds in her study that although there would be formal structures, the

responsibility of the collaboration tends to fall in the hands of certain key individuals in practice. They act as links and contact persons between the university, the companies, and students, and their role is seen as a significant for the successfulness of collaboration, especially if they are professionals (they have a suitable background or experience in collaboration) and being the contact person is their permanent job.

However, depending on individual people poses a problem as well. If those people for some reason would disappear, the future of collaborations is at risk. (Thune, 2011) Vihervaara (2015, p. 66), too, recognises that there are problems if all student collaborations go through a single actor, and suggests that centralization could be partially implemented instead. This could happen on a departmental level, for example, so that a university department had all its collaborations in education centralized. However, the gatekeeper problem would still remain (Thune, 2011). In general, departments play a pivotal role in educational collaboration, as that is the place where education happens. If the university is planning collaborations that in any way relate to education or teaching, it should make sure that the plans are approved on a departmental level. Other university actors or managers may be able to create good relationships with companies, but if there is resistance from the departments' side, the actual collaboration is really difficult to implement. (Vihervaara, 2015, pp. 57–58)

An important tool for universities to keep track of what is going on in university–industry collaboration, is a customer relationship management (CRM) system. The basic principle of CRM is very simple: when a university actor engages in collaboration, he or she enters the information of the company and the collaboration into the system. Now, when other university actors type in the name of that company, for example, they see all the interactions that have taken place between the company and the university, as well as the contact information from both sides. (Vihervaara, 2015, p. 73) However, much of the university CRM literature sees students as the main customers of universities, instead of companies. Furthermore, the concept of CRM stems from the world of business, and it needs to be adapted to a university environment which also requires a lot of commitment from different university actors. (Rigo, Pedron, Caldeira & de Araújo, 2016; Hrnjic, 2016)

From a company perspective, the way that universities organize their student cooperation activities may seem a bit random. This, along with the differences in the organizational contexts, is beneficial for companies to understand. One more dimension has to be taken into account as well: cultural differences between universities within and across countries.

2.5 Collaboration in Finland

Since the collaboration activities studied in this thesis locate in Finland, we now take a look at the factors that are specific to the Finnish context. For the most part, the universal features underlying university–industry collaboration apply to Finland as well. However, for the sake of the empirical part, it is beneficial to get an overall understanding of the state of collaboration in Finland.

First, a few remarks on the organizing of higher education in Finland must be made. The Finnish higher education system is two-fold: on one hand there are scientific universities and on the other hand there are working life-oriented universities of applied sciences. As far as Finland is concerned, this is the only division. Moreover, the Finnish higher education policy has emphasized the need for both institutions to bring working life closer to their agendas. (Tynjälä, 2006, p. 73)

According to Bleiklie (2005), Scandinavian higher education institutions tend to be equal in terms of quality, as long as they are the same type of institutions (such as universities). This implies that any Finnish university is basically just as good as the next one. The same cannot be said for their American or English counterparts. In these countries, universities, that from a Finnish perspective would have the same status, vary significantly between their prestige and perceived quality.

Let us take a step back and focus on the triple helix again by bringing in the companies. During the past few decades, the number of stakeholders of universities has increased. In Finland, according to Vihervaara, (2015, p. 41) this type of development has been occurring after 2010 or so. Universities were merging and becoming larger entities, and companies were also providing more and more financial support. Researchers' reward systems have been developed so that they guide researchers to engage in

collaboration. For instance, if a researcher applies for public project funding, he or she has to demonstrate how that project is done in collaboration with outside parties. (Vihervaara, 2015, p. 40; Haataja et al., 2018, p. 7)

In Finland, too, collaboration these days is understood as a two-way process, as opposed to the old-fashioned way of seeing it as knowledge transfer from universities to companies. Haataja et al. (2018) emphasize the emergence of co-creation, where universities and companies (and other stakeholders) get together to solve problems and create something new. This type of thinking, indeed, is what cross-sector collaboration in general is all about (Bryson et al., 2006). The co-creation can happen, for example, through different platforms, that many universities also in Finland have developed (Vihervaara, 2015, p. 152). These co-creational activities are used mostly in educational and working-life related collaboration. From the point of view of students, the development of Finnish universities as well as the collaborative environment in the last decade or so seems to bear a lot of potential.

2.5.1 The state of Finnish universities

According to the Finnish part of the State of University-Business Cooperation report prepared for the European Commission (Davey et al., 2018c), less than 50 per cent of Finnish academics collaborated with businesses in 2016. Nevertheless, out of these people, 99 per cent were willing to maintain or increase the collaboration in the future as well. However, as Davey et al. (2018c) also point out themselves, the results of the report may not be completely generalizable as the sample was not random. Also, as the study includes information from higher education institutions, it is to be assumed that it includes universities of applied sciences as well.

As in universities in general, the academics in Finnish universities are also very autonomous. Therefore, individual factors play a big role in how, and if, collaboration activities are implemented. Still, some common motivations to engage in collaboration can be found for all university actors, including academics but also management as well. Some of these include contributing to the third mission of the university, obtaining financial resources, and getting to use research in practice as well as getting new insights for research. Interestingly, for those academics who are not engaging in

collaboration, the main motive to engage would be to improve graduate employability. (Davey et al., 2018c)

Although the state of university–industry collaboration in Finland is rather good shape, Davey et al. (2018c) find many things that pose barriers to collaboration. The main one for Finnish academics seems to be lack of resources, especially the limited resources that firms have for the collaboration. Other barriers include the trouble of finding suitable business partners and the cultural differences between universities and companies.

In principle, university–industry collaboration is taken seriously in Finnish universities. The importance of collaboration is recognised and included in the missions, visions, and strategies of the universities. However, in practice, academics are not incentivised to engage in collaboration. As also stated earlier, researchers' performance is assessed by criteria that do not include collaborative activities with other parties. Nevertheless, academics perceive themselves as the ones who take initiative on collaboration. (Davey et al., 2018c)

2.5.2 Perspectives from Finnish businesses

To complete the Finnish context on university–industry collaboration, a report regarding the business perspective was also prepared for the European Commission (Davey et al., 2018b). Interestingly, though not surprisingly, the results are a bit different than the ones on the university side. Finnish businesses see that they are the initiators of collaboration. However, after the initial contact, companies wish to give the responsibility of the collaboration to universities. Universities not being active enough is indeed one of the barriers to collaboration. Other factors hindering collaboration are universities not having enough business knowledge or business focus, as well as the cultural differences between the institutions.

When it comes to the actual collaboration, it is mostly research-related, such as collaboration in R&D or consulting. If the collaboration involves students, it occurs mostly through student mobility, as in traineeships. (Davey et al., 2018b).

The Ministry of Economic Affairs of Finland has some data on how Finnish start-ups see the importance of university–industry collaboration, and what expectations they have towards it. These often globally oriented companies are interested in new knowledge and new operational models that help them solve problems and operate in the global market. Co-creation plays a big part in this as well. Start-up companies are also potential from the student perspective; they are constantly in need for talented workers. Finnish start-ups expect that universities are active in the collaboration, are able to operate in the business world and are creating networks and keeping the dialogue going, for instance. In turn, start-ups are willing to invest resources, even financial, in the collaboration. Interestingly, they also hope that universities would take advantage of the expert knowledge start-ups possess and use that in education, for example. (Hautamäki, Ståhle, Oksanen & Tukiainen, 2016) Naturally, companies have also their own interests in mind as well, but, in light of this, it would be fascinating to study if firms are interested in coming to university just for the sake of enlightening students.

3 METHODOLOGY AND RESEARCH DESIGN

This chapter goes through the research methods used in this study, as well as introduces the research design, or in other words, how these methods were used in practice to implement the research. Later in the chapter, the data analysis method is introduced.

3.1 Research methods

The nature of the study and the design of the research questions require that information is gathered from all relevant stakeholders; companies, students, and university faculty personnel. This shows in the selected research methods. As using more than one method makes it easier for a researcher to capture a wider set of perspectives (Hirsjärvi & Hurme, 2009, pp. 38–39), the data was collected using both interviews and surveys.

The research is conducted in a qualitative manner. Interviews especially are often associated with qualitative research, but also having a qualitative approach to a questionnaire provides the researcher with useful and interesting findings. As the questionnaire is qualitative, open-ended questions are used. (Wilson, 2010, pp. 142–157) Qualitative approach was chosen for this study as it helps the researcher to get an understanding of the participants' experiences, motivations, and the broader context of the topic in question (Myers, 2020, p. 9). The following paragraphs provide further reasoning for the use of interviews and surveys, respectively.

The interviews were semi-structured and built around the central themes of the study. This method gives weight to the interviewees' interpretations and meanings that they give to things (Hirsjärvi & Hurme, 2009, p. 48). It is also an effective way to conduct an interview; the interviewer can guide the conversation without having to control it too much (Koskinen, Alasuutari & Peltonen, 2005, p. 105). Importantly, as interviews in general, the semi-structured interview makes it possible to find some underlying motives behind the answers (Hirsjärvi & Hurme, 2009, p. 34). Moreover, semi-structured interviews are often used when the interviewee is an expert of a certain field (Alastalo, Åkerman & Vaittinen, 2017, p. 221).

The data regarding students and faculty personnel was chosen to be collected with surveys. For these target groups, surveys were a rational choice because the goal was to ask multiple questions from a large group of people. The target groups also suit the method very well considering that university students and university personnel are actually quite a selected sample, and one could argue that they are experts in their own fields and are at least aware of the themes surrounding the questionnaire. This mitigates the problem often associated with surveys and questionnaires: respondents not knowing or understanding the subject, or not having experience in answering surveys. (Hirsjärvi & Hurme, 2009, p. 37; Hirsjärvi, 2007, p. 190)

All questions were open-ended except for a few technical questions regarding the respondents' study phase or faculty, for example. This was a natural choice as the surveys were qualitative and the questions were asking for example students to explain how they feel or what they think about certain things. Open-ended questions do not restrict the respondents and force them to answer to already selected options. Moreover, answers to open-ended questions may provide the researcher with new information and insights. (Wilson, 2010, pp. 153–154)

3.2 Data collection

For the sake of clarity, this chapter is divided into two. The first part focuses on the interviews and the latter on the questionnaires.

3.2.1 Interviews

For the company perspective, eight companies were approached and interviewed. The decision on which companies to choose was based on discussions had with professionals from the University Innovation Centre and the Career Services. The main criteria for company selection was that the companies were already engaging in student co-operation with University of Oulu. In this way, it was possible to get insight into the actual collaboration that takes place between companies and universities. Another criteria for approaching the chosen companies was that they were, to an extent, considered to be key partners of the university or the faculties they collaborate with.

Every company's relationship with the university was, and is, unique; some have recently started collaborating while others have done it for a longer period of time. For some, the scope of collaboration is limited to certain actions, while others collaborate in different ways on multiple levels. Most companies were based in Oulu, but all were actively operating on a national or even international level.

All the interviewees were in a managerial position in their companies. They were either responsible for the student co-operation activities in the companies (either regionally or nationally) or otherwise had extensive knowledge and experience about the subject. The interviews were conducted during April and May 2020. Table 1 describes the interviews in detail. The table does not include the job titles of the interviewees to maintain anonymity, as some of the job titles are somewhat distinctive.

All interviews were conducted remotely over a video call and recorded to be transcribed later. As every interviewee was Finnish, the language of the interviews was Finnish (for the English translation of the interview guide, see appendix 1). Hence, the citations presented in the analysis are English translations. The questions to be asked were discussed with and approved by the University Innovation Centre and the Career Services before the interviews were conducted. The same framework of questions was used in every interview, although the order of the questions might have varied a bit.

Table 1. Interview details

| Company code | Industry | Interview date | Interview length |
|--------------|----------------------|----------------|------------------|
| A | IT services | 14.4.2020 | 22min |
| B | Retail | 23.4.2020 | 32min |
| C | Automotive | 27.4.2020 | 29min |
| D | Telecommunications | 5.5.2020 | 47min |
| E | Healthcare | 6.5.2020 | 44min |
| F | Retail | 11.5.2020 | 38min |
| G | Financial management | 21.5.2020 | 22min |
| H | IT services | 29.5.2020 | 23min |

3.2.2 Questionnaires

To capture how students perceive student co-operation between companies and the university, a questionnaire was designed and sent to all (bachelor's and master's) degree students of University of Oulu. The decision to approach all degree students was based on the idea that as student co-operation targets students in general, it is not meaningful to leave any group of students out. With that said, an exception was made regarding doctoral students as they were not included in the student survey. In the context of this study, doctoral students are not seen as students per se, but rather as part of faculty personnel, as in the case university, they take part in teaching undergraduate students, for example. Indeed, doctoral students are included in the survey for faculty personnel.

The questions of the student survey reflected similar topics as the company interviews, but the focus was a bit different so that the questions would be meaningful for students. These questions, too, were gone through together with the University Innovation Centre and Career Services before sending out the questionnaire. The survey was conducted on an online platform and a link to the survey was sent via e-mail to the mailing list of all University of Oulu degree students. Once the recipients opened the link to the survey, they were required to specify the degree they were pursuing at the moment. This was done in order to make sure that the respondents belonged to the target group of bachelor's and master's students. The respondent had a choice on whether he or she wanted to answer the survey in Finnish or English (appendix 2). In addition, the survey was also included in a pilot of TellusMore platform, a university-driven initiative that could be assessed either online or physically at the university. The survey was conducted in February-March 2020.

To get some understanding of how the university, the academics, see the situation, another questionnaire was designed and sent to personnel of every University of Oulu faculty. It is acknowledged that faculty personnel represent themselves within their faculties, and for example university management is not included in the survey. Therefore, it cannot be said that the survey respondents would represent the university staff as a whole. However, as is evident in the theory, the departmental factors as well as individual factors of academic staff, professors, and lecturers do play a role in

collaboration. It is to be assumed that faculty personnel would possess important knowledge especially regarding collaboration in education, which after all is one of the main aspects of student co-operation. This is the main criteria why the focus of the staff survey was limited to faculty personnel. The practicalities of the survey were handled the same way as with the other survey: the questions were approved by professionals in the University Innovation Centre and the Career Services, and the respondent had the choice of answering in either Finnish or English (appendix 3). To get access to the mailing lists of the faculties, the administrative staff of all the faculties were contacted first, and they in turn distributed the message forward. The survey for faculty personnel was conducted in March 2020.

The questionnaire for students yielded 128 responses. 62 per cent of the respondent group stated that they were master's students, and 38 per cent were in their bachelor's phase. As the survey was sent to a mailing list, the exact number of recipients, and therefore the response rate, is unknown. The personnel survey, on the other hand, yielded 63 answers. All eight faculties of the university were represented. However, most responses came from personnel of Faculty of Information Technology and Electrical Engineering, Faculty of Technology, and Oulu Business School.

3.3 Content analysis

Content analysis is a very basic way to analyze qualitative research. It is not only a single method, but also a loose framework that gives the researcher some freedom in how to go about with the analysis. (Tuomi & Sarajärvi, 2012, p. 91) An important phase of any interview analysis is coding the interview data (Tuomi & Sarajärvi, 2012, p. 92; Hirsjärvi & Hurme, 2009, p. 138). In this study, the interviews were coded by transcribing the interview recordings. The transcriptions were done word by word. The interviews and the survey answers were now both in a written format. Next, during the process of reading and going through the data, it was categorized into themes: common themes that were brought up both in the interviews and survey answers were identified. Many themes were naturally reflecting the themes of the interview and survey questions. However, some new themes that were not necessarily thought of in advance, also emerged. These new aspects indeed often provide very interesting information (Hirsjärvi & Hurme, 2009, p. 173). In the later phase of the analysis process, the data

was brought back into the bigger picture. This was done by using abductive reasoning, in which the researcher essentially moves back and forth between the theory and the new material (Tuomi & Sarajärvi, 2012, p. 97). Now new understandings of the phenomenon could be created, and new interpretations could be made (Hirsjärvi & Hurme, 2009, pp. 143–144). These showcase the findings of the study, which essentially provide answers to the research questions identified in the beginning.

4 RESULTS AND ANALYSIS

This chapter introduces the relevant contents of the interviews and surveys. The data is analysed theme by theme, starting from the ones that came up the most in both means of data collection. However, different target groups emphasized different themes and therefore it is not always possible to directly compare the groups with one another within a certain theme (e.g. social responsibility was an important topic for companies, but it is not necessarily a subject the students would touch on). Nevertheless, all important themes are addressed as they provide answers to the research questions, which are presented below:

- *What aspects play a key role when companies engage in student co-operation with universities?*
- *How do students perceive companies' actions at the university?*
- *How big of a role do faculty personnel play in student co-operation between companies and universities?*

The headings of chapters 4.2.-4.6. represent the themes that emerged during the analysis. These were present especially in the interviews, and the themes essentially represent the key aspects mentioned in the main research question. Chapter 4.7. focuses on the practicalities of student co-operation, mainly student associations and career days. They are not themes or key aspects in the same sense as the others, but since both students and the interviewees refer to them frequently, they deserve a chapter of their own.

Additionally, and before moving on to the actual analysis, chapter 4.1. gives a short introduction to the collaborative operations of University of Oulu. The university has also carried out some research regarding its university–industry collaborations, some of which are similar to the topic of this research. Although not a central part of this study, the results are still worth introducing.

4.1 Prior knowledge of collaboration at University of Oulu

University of Oulu, with its eight faculties and 13 000 students, is one of the biggest universities in Finland. On top of faculty research, University of Oulu also has specialized research units. (University of Oulu, 2020a) While acknowledging that these units may have some sort of collaboration activities as well, this thesis does not delve deeper into those. This is due to the fact that the collaborations of specialized research units are very heavily research-related and so specific that they are not in the scope of this study. However, there are two operators within University of Oulu that should be described in more detail: University Innovation Centre and University of Oulu Career Services.

University Innovation Centre is a joint unit, or a service, between University of Oulu and Oulu University of Applied Sciences. It acts as kind of an interface between the university and industries. For companies, it offers help in utilizing research results and competence of researchers and help in getting access to different research devices and laboratories. It also works as an initial contact point for companies that are interested in university collaboration, and helps those companies find what they are looking for within the university. For university students and staff, the University Innovation Centre offers the following services, for example: commercializing research results, training for intellectual property rights and how to turn ideas into business, how to apply for funding, and overall guidance in questions related to innovations, patenting and university-born start-ups. (University of Oulu, 2020b) University Innovation Centre thus clearly bears some resemblance to technology transfer offices described earlier. It is also a way for the university to centralize some of its interactions with companies.

While the University Innovation Centre caters more for the entrepreneurial interests of students, University of Oulu Career Services offers students a bit more traditional services in helping them to get into working life. They offer students information on traineeships and possible thesis collaborations with companies. Career Services, too, work as a general point of contact for all work-related questions. For companies, on the other hand, they offer help in how to initiate student co-operation. (University of Oulu, 2020c)

Many companies also collaborate with university-associated parties that are not directly representing the university. The most notable ones are the Student Union and various student associations of major subjects. One specific event needs to be mentioned as well, the annual Pesti Career Day. As career days usually, the Pesti Career Day gathers students and companies to the university to discuss traineeships, thesis work, summer jobs, as well as career possibilities at companies. As a big recruitment event, it is one of the most visible examples of student co-operation within University of Oulu. (Pesti Career Day, 2020) With that said, there is a need to justify labelling Pesti Career Day as student co-operation, as it is not organized by the university. Indeed, the event is organized by students of technical faculties and an associated company. Therefore, the companies attending are not essentially collaborating with the university, which merely provides the physical space for the collaboration. However, as the event draws in both students and companies the same way any student co-operation does, it would not be meaningful not to include it student co-operation. Similar issues arise concerning collaborations between companies and student associations. The university itself is sort of disregarded, and students, or student associations, take of the role of the collaborator, instead of being the target of collaboration.

A potential problem exists for the university regarding companies' interactions with the abovementioned associated parties. That is, none of these interactions are officially documented into the CRM system the university uses. With that said, as of October 2019, only one faculty was using the CRM system. (University of Oulu, 2019a)

Getting back to the traditional university–industry collaboration, University of Oulu has some very relevant data to the topic of this thesis. In the time period of 2015–2017, University of Oulu and Oulu University of Applied Sciences did a joint project, the goal of which was to create and develop businesses through new ways of thinking and working. The project, called KoKo (Korkeammalle Korkeakouluyhteistyössä), targeted small firms and start-ups as the parties that would benefit from the project. (University of Oulu, 2019b) As part of the project, a survey regarding university–company collaboration and a master's thesis were carried out. The companies in question were mostly micro or small firms. The next few paragraphs outline the results of the study.

University of Oulu and the firms mostly collaborated in education and research. The educational activities included internship, thesis work, projects for students, workshops, presentations, and guest lectures. On the research side, the collaboration mostly included joint research. Oulu Business School, Faculty of Technology, and Faculty of Information Technology and Electrical Engineering were the faculties the firms had most interactions with. (Nguyen, 2017; University of Oulu, 2017)

Overall, the companies held University of Oulu in high regard, both in education and research. They also emphasized University of Oulu's importance not only to Oulu region, but also to Northern Finland. However, the firms perceived University of Oulu as a passive partner not having too much impact on the companies. Another downside mentioned was the university's lack of knowledge in commercialisation. Many companies were interested in collaboration but did not necessarily know how to collaborate with the university, or did not know what the university has to offer. As often is the case, the firms perceived that the bureaucratic nature of the university created a barrier to collaboration. (Nguyen, 2017; University of Oulu, 2017)

So why were the companies so interested in collaborating with University of Oulu? For them, the university was a place from where they could get new knowledge and technology as well as competence to develop their businesses. The university was also seen as source of new employees, and the firms were indeed willing to arrange traineeships with these purposes in mind. (University of Oulu, 2017)

4.2 Recruiting

This chapter begins the analysis of the themes that emerged in the present study. Regardless of the target group, recruiting or related activities were brought up time and time again. This was especially important for companies. In fact, recruiting was the underlying theme behind many other interactions, even so that many of the topics in the whole content analysis eventually relate to recruiting. The theme came up in every interview and some companies clearly stated that it was the number one reason for collaboration. The approach to recruiting varied between the firms. For bigger companies or companies who have had long-term relationships with the university, the style of recruitment was not that direct. They wanted to hire the top talent, but the

focus was on the long term and the topic was not overly emphasized. This may be due to the fact that bigger companies and bigger employers naturally get a steady influx of (graduated) students into the companies anyway. A similar phenomenon was recognizable in another company (E) that operates in a very narrow and specific field and has had a long-standing relationship with the respective field of science: collaboration was so natural that no extra emphasis on recruitment was needed. Although certain industry sectors (and fields of science) are more likely to get involved in collaboration in the first place (Schartinger et al., 2002), it is evident that previous experience plays a crucial role and eventually leads to more and more collaboration.

Sometimes the recruiting activities can be more direct. Three out of eight interviewees stated that their companies have clear career paths designed for University of Oulu students, and that they actively use those in recruiting at least on a yearly basis. Career path as a concept was mentioned in multiple interviews, however, but not in such an active manner. According to Gault et al. (2010), traineeships in particular are important steps in the path towards employment, and employers usually understand this. Indeed, seven interviewees mentioned that they have traineeships for university students in some form or another:

“Last year, all of our summer trainees continued as full-time or part-time employees during their studies in the autumn... they do theses for us as well but it has always been so that they have been trainees first and then done the thesis on the side and then stayed with us full time after graduation. So, we have the path... first, guide them to be summer trainees and then the thesis so we can commit them to us every step of the way.” (C)

For four companies, recruiting was more noticeably in the forefront of collaboration. Although they had established relationships with the university, they were not as established as the relationships some other companies had. They also did not have any research collaborations with the university. The recruitment activities of these companies were characterized by direct, active, and straightforward interactions. One of the interviewees (A) mentioned the short-term nature of their recruitment activities as they have a need to fill in open positions with talented people.

Recruiting, or employment, was also a recurring theme in the student survey. When asked if students had taken part in on-campus events with companies, a whopping 72

per cent stated that they had took part in events specifically related to recruiting. However, 40 per cent of the respondents said that they had benefited from participating in events, with 50 per cent having not benefited from participation. The ones stating that the events had been beneficial for them, mentioned employment, getting to know companies, and networking as major takeaways from the events.

Although students' perceptions of the usefulness of taking part in events with company presence vary, companies tend to see the positive outcomes more often. Six interviewees stated explicitly that they had gotten what they were looking for when it came to the outcomes of their recruiting activities.

Students clearly had some sort of demand for company involvement, as 58 per cent of the respondents stated that they would like to do their bachelor's or master's thesis for a company or other third party. With 20 per cent answering "maybe", the total amount of the potentially willing students rises up to 78 per cent. However, out of that 78 per cent, only 28 per cent explicitly cited possible future employment (as in mobility) as the reason for their collaboration interests. For nearly half of the respondents, the reason was related to something else, such as the students' own interest and learning opportunities (as in collaboration in education), as well as getting a chance to do meaningful work from which somebody would actually benefit. Circa one fifth also mentioned money as their motivator to collaborate with companies in the thesis process. The students' mixed motives make it easier to understand why prior literature has struggled with the categorization of thesis collaboration (or traineeships for that matter (Perkmann & Walsh, 2007)) in labelling it as either mobility (Schartinger, 2002) or collaboration in education (Vihervaara, 2015, p. 105). This is something also companies might want to take note of; students have different motives towards collaboration too.

Assuming that students had some interests regarding employment, they were asked what companies could do to help them on their journey from the university into working life. One fourth of the answers directly related to recruiting. Students were extensively hoping that companies would give more opportunities for recent graduates and be open for hiring people without previous experience. Also, trainee positions were very much sought-after as stepping stones into working life. Many times, indeed,

this is the case (Crebert et al., 2004; Gault et al., 2010), and student co-operation in general helps students find their first entry level job (Cranmer, 2006).

The faculty staff also expressed their interest in helping out students and mentioned working life relevance the most when asked about reasons as to why they engage in student co-operation with companies. On the other hand, students felt that the university had much improvement to do in order to help them in the process of advancing their career prospects.

4.3 Branding

Along with recruiting, branding emerged as a major reason behind companies' engagement in student co-operation. Many times, the two overlapped heavily with one another. Hence, branding can be divided into two, employer branding and corporate branding. As one company representative put it:

“The better the employer brand is, the more likely it is that people will come work for us. But it affects how they want to collaborate with us even if it was not an employment relationship. It could be some other type of collaboration. So, these are the reasons. On one hand there is the employer brand that aims for recruiting... on the other hand we think that what we do with students affects how they want to use our services.” (F)

Another interviewee emphasized the long-term aspects of branding:

“University is a place where future decision makers are also growing. If our name sticks into their minds, then even if they will not work for us, they might be buying something... in their future companies. It is good to have our name in their minds at that point.” (A)

The results of the student survey shed some light on the reasons as to why a specific company would stick into a student's mind. 44 per cent of respondents stated that they remember certain companies from the university when asked about their interactions with companies and if any company had specifically caught their attention. Two things stood out from the answers: students' familiarity with the company and positive feelings caused by company representatives, such as recruiters or guest lecturers. This shows the importance of individual factors also from the company perspective.

Although the literature on the topic often associates individuality with university employees, or even strictly researchers (Gunasekara, 2006; D'Este & Patel, 2007), these results would imply that though the interplay between university and company individuals is most likely needed to get student co-operation started, it is the company individuals that play an essential role in the successfulness of the collaboration. Another implication of this would be that well thought-out and implemented collaborations in education are useful for companies and students alike, as these collaborations enable somewhat personal relationships with a party that clearly has some recruiting/branding/working life relevance.

Although some interviewees recognised the potential of branding also on a more general level, many companies essentially engaged in employer branding as it served as a tool for recruitment. In practice, this meant being visible for students and making them aware of the companies and the opportunities and career paths they could offer. Along with the companies, the interviewees were also interested in showcasing the industries the firms operate in. Some felt that students did not always fully understand the possibilities in the bigger picture:

“People know very little about us having something for students of that field, and it challenges us again to think about how we are going to get those students to become interested in us and would be seen as a workplace worth going after as well.” (G)

Two companies specifically expressed their frustration for reaching students of different disciplines; they were doing well with their “main target group” but were struggling to collaborate with another field, whether the problems were related to students’ perceptions of the company or problems emerging from the university side. For many students, on the other hand, a recurring concern throughout the survey was not having the opportunity to get to know companies related to their disciplines.

The importance of student associations came up in multiple contexts, also branding. For many companies, student associations were important places to build a brand or a positive image among students. One interviewee (A) stated that they do not have so much need for general visibility, as they reach their main target group through these

organizations. Some interviewees emphasized students' role in brand building, as they talk with each other and share the experiences they have had with the companies.

Visibility at the university and among students was very much desired. However, not too many interviewees delved deeper into the topic or pondered on the different aspects of visibility. One interviewee was particular about giving something back to *students*, though, kind of as in exchange for the visibility:

“Having a company name on the wall, I do not know if that matters. But when something is brought there [to the university], something that is a nice thing for the students and something that they benefit from, then it begins to matter.” (F)

It was almost taken as given that branding through visibility and presence leads to some kinds of positive outcomes. The companies' positive approach to visibility may be partially explained by the fact that they were not specifically asked about the negative outcomes, as it was not a central topic in the original framework of questions.

In general, the students' opinions on company presence and visibility at the university were rather favourable for companies. When students were asked how companies could help them in the transition from university to working life, circa 25 per cent emphasized the importance and need for on-campus presence. Reflecting on the ideas of Jaidi et al. (2011), these respondents may be actively pursuing jobs, as students who are not that active do not see the connections between companies' on-campus presence and employment so clearly. In practice, the ones who did recognize the importance of on-campus presence hoped that companies would come to the university to present themselves and bring themselves closer to students and actively engage with them.

As said, the general attitude towards companies' presence was rather positive among students. However, generalizing in a topic like this might turn out to be a bit risky. In the survey, students were also asked about their feelings regarding company presence at the university. 31 per cent of the students responded that seeing companies at the university evokes positive feelings. Similar number of respondents had no strong opinions one way or the other. However, for 14 per cent the feelings were negative. For some, the negative feelings were rather strong, with emphasis on general annoyance and thinking that the university is not a place for company branding.

The student data shows the complexities of having on-campus presence. While some students were reluctant to have companies around, 18 per cent wanted to see more firms at the university. In contrast, 14 per cent of the respondents mentioned that they did not really see any companies around. Other than simply wanting to see companies more, 16 per cent of the respondents specified some other areas of improvement. Although many were seeing companies at the university, they felt that it was difficult to approach them or did not know how to do that. Many (also among those who mentioned they do not see companies around) felt displeased about not being exposed to companies related to their fields of study.

4.4 Communication

As the theory suggests, the cultural and structural differences between the organizations can definitely pose a barrier to collaboration (Bruneel et al., 2010). In this study, this shows mostly in aspects related to communication. For nearly all the case companies, communication has mainly taken place through some sort of personal networks. For some, the nature and the longevity of collaboration have created a natural environment for communication, while others depend more on individual connections the people have developed. Although communication happening through personal networks is not a bad thing by any means, the interviews showed that companies are not happy with the overall level of communication. However, in the same breath it must be noted that two interviewees were quite satisfied with the communication between the university and their company, or at least were not emphasizing any areas of development.

Five out of eight interviewees felt that the potential of collaboration was not completely fulfilled due to problems related to communication. Especially inactivity from the university side and the lack of, or lack of awareness of, communication channels stood out as factors in the way of collaboration. Reflecting on the theory, functioning of communication is reminiscent of an enabler or a barrier, that either fosters or hinders collaboration (e.g. Schartinger et al., 2002). One interviewee expressed the frustration of trying to get a conversation started with the university:

“Now it is like, who am I going to contact or who could I talk about this with and so on. The university could perhaps take more initiative and sometimes ask the companies that they collaborate with that ‘hey, could we help somehow or is there something, maybe there could be this type of thing...’” (G)

Another interviewee, too, told about the difficulties of getting the collaboration going, especially on a more formal level:

“We have felt it challenging that when we would like to directly have an influence on the course contents, for example, or to go and tell what kind of skills we would need and what kind of things they might want to emphasize in the studies, so we have felt that it is more challenging to get directly into that collaboration.” (C)

On a general note, many of the issues revolving around communication, or branding for that matter, were related to the concept of awareness: companies and the university being aware of each other, being aware of how to communicate with each other, or making students aware of different possibilities.

Many companies who have a bit more established collaborations going on also on an institutional level were quite satisfied with the state of communication between the two. The nature of the university, however, can still pose difficulties, for example in the form of channels:

“What is difficult for companies is that how are you going to get your voice heard about what kinds of trainee positions and thesis opportunities your company has to offer. What is the channel... [there are] many types of customs. But it is a constant problem, how am I going to get a solution for this type of problem and a person to do the work.” (D)

As the previous citations show, finding the right person to contact can be a struggle. Aside from personal ties, six out of eight interviewees either did not know who to contact and/or were hoping for some sort systematic structure for communication. Throughout the interviews, it was possible to interpret that at the time it was more or less random. Half of the interviewees emphasized that the university should have a dedicated contact person in one form or another in order to overcome the problem:

“I think it works best when there is this single contact person that we would always contact and who would take the matter forward. Otherwise we cannot

really know who to contact. Now, if we happen to have old students of that university working for us, they know the individual professors and they can make a direct call and that is fine. But the baseline would be that there is a contact person who takes care of things.” (F)

The companies’ desire for a contact person was evident, but as the theory suggests, there are reasons as to why universities may not be that willing to centralize their student co-operation activities to the hands of a (single) contact person. These include the facts that introducing more administration does not generally advance collaboration (Bruneel et al., 2010) and the emergence of possible gatekeeping problems, for instance (Thune, 2011).

One interviewee, on the other hand, suggested that every department could have its own dedicated contact person, and said:

“I think the collaboration still depends a lot on certain professors and coordinators and if they have the time and willingness to help the progress of it. So, systematic collaboration is worth building perhaps even more, regardless of disciplines...” (C)

Although it might be easy to regard the contact person as someone who only receives and distributes messages from companies, that is not the case. Two companies were especially emphasizing the role of the contact person as an actor who proactively contacts companies and whose day-to-day job indeed is to interact with companies.

These ideas and the previous comments are in line with what especially Thune (2011) has found. Collaboration tends to become the responsibility of certain individuals; however, having contact persons is perceived as a success factor when the contact persons are professionals in their work.

In addition to having a contact person, two companies heavily highlighted another way to make collaboration more organized and structured: universities should identify the possible ways to go about with the collaboration and package them. Companies could then choose a suitable package for their purposes:

“Collaboration works well when the university has a model for it, a concept. It means that they have made some kinds of decisions about what the collaboration includes, what are the options, and what it does not include and what they will not be doing... because if I ask ‘what can we do?’ and they say ‘what do you want to do?’, we are not getting anywhere... it is so much easier to start collaborating [when there is a clear model] as opposed to a situation where there is no structure.” (F)

For faculty personnel of the university, communication with companies seems to be working decently in both directions. 83 per cent of the respondents of the staff survey expressed that either they have contacted companies or have been contacted by companies regarding collaboration. The collaboration in question had quite evenly been related to either research or teaching. Although most collaboration plans (62 per cent) were realised, nearly 30 per cent were only partially realised, and 10 per cent were never fulfilled. Many staff members seem to engage in collaboration quite frequently, as most of those who took part in student co-operation said to have been collaborating several times a year, many even more often.

Overall, company collaboration seems to be a quite discussed topic among faculty personnel, as 69 per cent of the respondents stated that they talk about the subject within their communities. Many also stressed the importance of companies to the university.

For students, communication was an important theme as well, but naturally from a different perspective than for companies. When it came to communication channels per se, students seemed to encounter companies mainly through emails and social media (most notably the Tuudo app). Email also often came up as a preferred way when students were asked how they would like to be approached by companies.

In general, students also hoped that companies would engage in proactive communication, as sort of a precondition for recruiting activities. This could happen through various channels, such as direct contacting, or contacting through student associations or the university. However, students did not treat communication as something that only the companies are responsible for. Communication stood out as one of the most important single factors when students were asked what the university

could do to help them get into working life. In practice, this meant informing students of positions they could apply.

4.5 Influence & learning

As stated earlier, many collaborative efforts from the company side eventually relate to recruiting. One way to try and make sure that graduates' skills and firms' needs match is to have an impact on what the students are being taught (Thune, 2011). This theme, along with recruiting, is perhaps the most traditional one when considering student co-operation activities: it is essentially collaboration in education and it entails the idea of transferring knowledge, from companies to students and also the other way around (Geuna & Muscio, 2009).

Five interviewees expressed that they wish to have an influence on the skills that students obtain, although the levels of influencing varied. Some wanted to be present in a classroom setting for educational purposes while others had a clear agenda that they wanted to push forward, whether in a classroom or on a higher level. Six interviewees mentioned that people from their company go or have been going to the university to give guest lectures. Guest lectures indeed enable companies to engage in different types of influencing, such as teaching subject knowledge, informing students about career prospects, or even making an impression in the eyes of students (Ormrod, 2004; Vihervaara, 2015, pp. 86 – 87).

Three companies were, or wanted to be, engaged in decision making on a higher level in the university. Although most companies wanted to influence course contents directly, one interviewee felt that they do not necessarily have to do that, as the focus is on the higher level:

“Well, we may not really need to have an impact on what the students are learning. The university has academic freedom [...] and I do not feel that we have the need to tell them what to teach. But when a higher education institution is thinking about its educational objectives and which direction they want to go and what things should be taught in general, that is where we want to be involved... But mainly we go along with the course as the contents are usually really good.” (F)

For at least one company, collaboration on an institutional level also meant influencing research. Given the nature of universities as described by Jongbloed et al. (2008), the research contents of a department do show in the contents of teaching as well. The company in question indeed acknowledged that the spill-overs from research flow into the classroom, although the process may be slow:

“It does show in education, the things we like to be researched and the things emphasized in research. So, it has an impact on studies... But you cannot directly say that ‘we went and told about this, so you should teach this’... It is such a long-term process, influencing studies. But perhaps the fastest results regarding influencing the contents of teaching are achieved so that in a class that includes guest lecturers, we have had somebody telling about [...]” (D)

In addition, three interviewees felt that university studies provide students with skills that are perhaps a bit too theoretical for working life. Some interviewees expressed that the students are not necessarily that ready for work or are too cautious when it comes to working:

“Little less theory, even more practical [...] during studies so that the people would be more ready for working life. And you do see the difference between the university of applied sciences and the university. It is understandable, of course, and both have different roles but for us it is a problem sometimes... that the skills are quite theoretical.” (A)

One company (E) that also recognized that university knowledge is very theoretical as opposed to what the work is in practice, is in a unique position to overcome the problem. The nature of the industry it operates in as well as the nature of the respective field of science require that the students and the industry players collaborate in traineeships. This is a textbook example of knowledge transfer: the type of knowledge that needs to be transferred (students’ practical knowledge) has guided the two parties to choose the best channel (training) for it so that the goals of collaboration can be achieved (Bekkers & Bodas Freitas, 2008). Indeed, the situation has brought the firm and the university department close to each other with mutual benefits: department achieving its educational goals and the company preparing students for working life, including possible recruitment benefits as well.

These types of situations, where for example work placement is crucial for the professionalism of students, act as examples of cross-sector collaboration in practice: sectors coming together to create value that would not exist without the collaboration (Bryson et al., 2006).

In addition to simply affecting students' skills, some companies recognized the importance of spreading awareness in both directions, or the possibilities of mutual learning. One interviewee, in particular, strongly expressed the need to have on-going interactions so that both the company and the department are on track of what is going on in the field:

“We engage with the university so that we have a feeling that we are up to date. But I feel the knowledge transfer is going both ways. It would be really important for the university to understand that company collaboration gives information about what is actually going on in the practical field.” (E)

Students, for their part, acknowledged the learning possibilities of company interactions, but not too strongly, as most of their motives to engage in collaboration were related to employment opportunities. Many students saw especially thesis collaboration as an opportunity to develop and learn more about the subject. Although many other reasons had a bigger impact on the willingness to co-operate in thesis work, the learning aspect was rather significant.

In addition to learning from thesis work, students wanted to learn more practical things and have some working life relevance in their studies. This was one reason why they wished to have companies at the university. It was also hoped that the university would invest in the quality of education in general and modify the course contents so that they better prepare students for working life. Some students, on the other hand, felt that companies should familiarize themselves with the course contents and modify their actions accordingly. Students' learning possibilities are not limited to a classroom only, though. Many also hoped for some general working life related training, guidance, and support. Furthermore, some students wanted to see more smaller-scale events, from the university and the companies and perhaps targeted to a certain audience, that would benefit them whether from an employment point of view or other. Indeed, as Jackson (2014) states, universities and companies both have the

responsibility to ensure that students' generic working life skills are up to date with industry standards.

As stated in the chapter about recruiting, most of the faculty personnel engaged in student co-operation to give students some working life relevance. Many times, this meant bringing companies to classes and showcasing the real-life applications of course contents. These reasons to engage in student co-operation could also be loosely categorized as actions of "social responsibility", the topic of the following chapter which mainly focuses on companies' points of view on responsibility. Small number of respondents took part in student co-operation to advance their own interests (such as learning or networking) or simply because it was a part of their job.

4.6 Social responsibility

An idea of some sort of a win-win (-win) situation where the company wins, the university and/or the students win, or even the society as a whole wins came up quite frequently in the interviews. Five interviewees in particular brought up the subject of social responsibility and for some it was one of the major reasons for collaboration in the first place, right up there with recruiting and branding. Social responsibility in this context covers a wide range of perspectives, as some interviewees talked about responsibility in the bigger picture, while others referred to it regarding situations that create mutual benefit between the parties.

Two interviewees mentioned the importance of the university's existence, whether it was for their own purposes or for the overall good of the geographical area:

"The university has an important role in Oulu, and I would say that in Rovaniemi too. It would be a sad situation if universities were not alive and well here in the north, it is also a guarantee for civilization." (B)

Some, especially bigger companies, felt that it was also their duty to engage in collaboration, for example as significant local employers. For one company (D), this also covers basic activities of student co-operation such as traineeships, thesis work and helping out student associations, for instance.

One company had recently started a new collaboration that, in addition to benefiting the company, was aimed for the common good of all students. The interviewee herself and her personal values were very much the driving forces of the collaboration:

“...So, to have something general for the students, also other than those who come work for us, to teach generic skills. It would be useful that everyone, especially I have a certain passion, that everyone found their own interesting field and passion and could stand out in job search and find a meaningful job, so we have had a general perspective in that as well.” (C)

This shows the importance of individual factors again, not least because they were something that helped companies stick in students' minds, according to the student survey.

Interestingly enough, the aspect of social responsibility did not really come up in the theory: it is not student co-operation per se, and it does not relate to for example knowledge transfer that characterizes many collaborations. However, based on prior research regarding University of Oulu, it was known that companies acknowledge that the university is important to the local region, or Northern Finland for that matter (Nguyen, 2017; University of Oulu, 2017). Indeed, looking at responsibility (and especially the kind of responsibility that focuses on fostering the local environment) in the bigger picture bears resemblance to the cross-sector collaboration ideas of creating public value.

Students, on the other hand, did not really mention social responsibility in their survey answers, at least not directly. However, when they were asked what the university and companies do to help them get into working life, many responses indirectly related to the responsibilities of the two parties, as it was hoped for example that companies would have the courage to hire recent graduates.

4.7 Student co-operation in practice

This chapter focuses on two things, the importance of student associations and career days. As opposed to the topics in chapters 4.2.-4.6., these phenomena are not themes that would play a key role in the grand scheme of things, not at least in the same sense

as the others. Career days especially are practical examples of a bigger theme, recruiting. However, both of these are subjects that both the interviewees and the students frequently brought up.

4.7.1 Collaboration with student associations

Collaborating not only with the university, but student associations too, was an important part of companies' student co-operation activities. Indeed, every interviewee mentioned that they collaborate with student associations. For one company, student associations as partners were as important than the university institution itself. Another firm had a clear division between the two and had made plans for both levels of collaboration. For some, the associations provided companies with yet another medium to reach students. None of the interviewees had anything negative to say about collaborating with student associations.

In many interviews, student associations came across as very natural and easy partners, with whom the threshold to collaborate was very low. The associations themselves were quite active, too. In practice, the collaboration meant hosting events and company visits, for example. Companies also wanted to help out students and showed support by engaging in sponsor deals or helping with different types of costs.

For students, the associations provide yet another chance to experience company presence. When asked about the circumstances in which they had encountered companies at the university, 13 per cent of the respondents mentioned student associations. In reality, the number could be bigger as many other touchpoints mentioned, such as emails or company visits, can come through or be organised by student associations as well as the university.

4.7.2 Career days

The concept of a career day or equivalent came up in seven interviews. Five interviewees specifically mentioned that their company takes part in the annual Pesti Career Day. One company participates in a career day organised by a student association of related field of science, and one interviewee mentioned the phenomenon

on a general level. Pesti Career Day in particular played a significant role in many firms' recruitment activities and the event was treated almost as a matter of course. In addition to participating in Pesti Career Day, one company also organised its own recruitment events at the university. Another company had invented a simple way to make the most out of Pesti Career Day. They invite the relevant student associations to their premises a few weeks before the career day and have recruiters telling about the career opportunities at the firm. When the career day comes, the students are somewhat familiar with the company and the recruiters already, which lowers the threshold to go and engage with the company again.

In terms of student being exposed to companies, career days were by far in their own league. Whether students were asked about their participation in events or the situations they have encountered companies in, career days or similar recruitment events steadily received around 70 per cent of the responses. However, mere participation can only tell so much, as a significant number of respondents felt that they had not really benefited from participation.

5 DISCUSSION AND CONCLUSIONS

The final chapter of the thesis summarises the main results of the study, including the new-found understandings that contribute to the existing body of research. The chapter also discusses the implications and the usability of the study, as well as outlines some potential avenues for future research.

To recap, the main research question of the thesis is presented below:

- *What aspects play a key role when companies engage in student co-operation with universities?*

The sub-questions that complement the big picture are as follows:

- *How do students perceive companies' actions at the university?*
- *How big of a role do faculty personnel play in student co-operation between companies and universities?*

Five key themes emerged during the analysis process. These themes represent the aspects that the main research question set out to find. All of these played an important role in the student co-operation between the case companies and universities. Some of the themes were born out of companies' needs or companies' values while others were crucial for the practical realization of collaboration. The key aspects found in the study are: *recruiting, branding, communication, influence & learning, and social responsibility.*

The following chapter discusses each of these aspects in more detail. Also, the discussion reveals answers to the first additional research question, the perceptions of students. Finally, the role of faculty personnel is discussed.

5.1 Discussing the findings

Recruiting (or employment as viewed from the student perspective) especially was a major theme, in the form of hiring employees or finding a job. The approach to recruiting varied between companies. Some companies were agile, active, and straightforward, while others more or less let things run their own course. These approaches also went hand in hand with the size of the companies (as local employers), the history between the companies and the university and/or whether the two collaborate in research or not.

Students, for their part, actively encountered companies in recruiting situations, such as career days, and also took part in such events. However, high rates of participation did not predict that the students had benefited from participating in recruiting events. This is one of the findings of the study and will be analysed more also later in the chapter. When it comes to employment, students hoped that companies would give opportunities for recent graduates and candidates that lack previous work experience. Similarly, traineeships were extensively desired as well and companies thought they were important, too. For some companies, traineeship was a major step in their recruiting as a part of a career path.

From a recruitment perspective, most companies were satisfied with the results of their collaboration with the university. They have been able to hire new employees and trainees, for example. As said, a notable number of students felt that they have not benefited from participating in career days, for example, and in general found that there is more that the university and companies could do to help them get employed. Naturally, not every student can get a traineeship or a job at a certain company; the number of students is much higher than the relatively low number of open positions. This would imply that there is a situation where most companies and some students are satisfied, and many students are left empty-handed. While this itself is not a thing companies need to worry about, it may have some impacts on the company image, which is actually the real takeaway from this and brings us to the second major aspect of university-company collaboration, branding.

Every case company wanted to have visibility at the university and among students, and hence *branding* became a major aspect in the study, along with recruiting. University collaboration was seen as an opportunity to not only brand the company as an employer, but also in the eyes of (future) customers. Branding is an interesting piece in the student co-operation puzzle, and definitely a part of the “other activities” category identified in the theory; it has no educational purpose and it is not linked to mobility either, although employer branding entails the idea that at some point mobility, and therefore knowledge transfer, is welcomed.

Nevertheless, visibility or having on-campus presence is a bit of a double-edged sword, as it can have negative impacts on the employer brand of the companies (Jaidi et al. 2011). This study confirms this phenomenon; although many students wished to see companies at the university and had positive feelings about it, many were also indifferent and for some, companies’ on-campus presence evoked negative feelings. In light of these results, it is interesting why so many companies rather uncritically want their brand exposed to students.

However, the positive feelings seem to be worth going after. According to the student survey, students remember the companies they have had positive encounters with. This gives weight to the importance of individual company representatives that the students meet. In addition, if the students are familiar with the companies they encounter, they are more likely to remember the company name later on. Based on this, companies might want to engage in collaboration in education (e.g. in a classroom setting) or organize small-scale events to a selected target group. This enables students to meet companies they most likely know already, and if the company representative is convincing enough, the branding opportunities alone are quite promising.

Communication emerged as a major aspect affecting the realization of collaborations and their successfulness. Many companies perceived that there is lots to do to develop communication channels and practices between the organisations. Many also did not really know who they should contact at the university. At the time of writing, most collaborations took place through some sort of personal contacts and was more or less random. Communication lacked structure and that was something most companies wanted to change. As a result, there was a high demand for a university contact person.

Naturally, the situation varied between the companies, and some firms had more systematic structures with the university due to the nature and history of their collaborations. Interestingly, the informal and personal connections still played a big role.

In addition to having a contact person, some interviewees suggested that the university could package or have a clear model of the student co-operation activities it is willing to undertake. The idea behind having a model is that companies would know what they can do, could choose what they want to do, and both parties would be on the same page right from the start.

One could ask why universities should take the time and the trouble to establish new positions or create packages for companies and thus advance whatever motives companies have behind their wishes to collaborate. Even if financial gain or external pressures are excluded, there is still one reason why universities might want to enhance the environment for student co-operation: the benefit of the student, whether from a learning or employment perspective.

Nevertheless, the demand for a contact person and the number of companies not knowing who to contact is so high that it is interesting why the case university has not done too much about it, or at least has not let companies know about any communication channels. In the end, what matters is that companies *perceive* that they do not know who to contact. Furthermore, whether the companies interviewed found communication (and therefore collaboration) challenging or not, they still engaged in it. Companies want to collaborate and eventually find some channels to do it. From this point of view, universities might want to invest in communication as collaboration takes place anyway; with established structures, universities would just be on track of what is going on.

Creating a concept, or a model, around student co-operations could yield similar benefits. If there was a model, universities would have the power to set the rules and the boundaries of collaboration before it even takes place. As the interviews show, companies' intentions can be quite diverse and if they knew what types of

collaborations are possible and how they could be initiated, the university would most likely alleviate some workload at least.

The findings regarding the fourth aspect of student co-operation, *influence and learning*, did not really bring so much new information, but rather confirmed what is already known: companies wish to influence students' learning and students benefit from it as well (Thune, 2011). Developing working life skills was a central learning aspect for both parties. For some companies, the focus of influence was on a higher level, as they wanted to have impact on what is going on in research or wanted to take part in decision-making on an institutional level. This type of influence would naturally show up in teaching eventually. For many companies, influencing took place in a classroom setting as some sort of collaboration in education. The wish for more working life relevance from both parties yet again draws attention to the possibilities of educational collaboration or small-scale events to a targeted audience. One aspect is also worth noticing: students regarded thesis collaboration as a major opportunity to enhance their learning.

The final aspect that emerged in the analysis, *social responsibility*, almost by itself acts as an important finding of the study. Most interviewees brought up the subject, although they did not necessarily share the same definition for it. For some, responsibility was an integral part of collaboration. This means that collaboration must benefit all parties, the companies themselves, students, and the university. Some companies felt that they have a responsibility to engage in collaboration, as they think that collaboration contributes to keeping the university and the local area alive and well, or that the existence of the university helps them to hire new employees. Similarly, some interviewees said that as their companies are significant employers in the area, they feel that they have a responsibility to collaborate with the university.

The concept of social responsibility was not really connected to university–industry collaboration in the theory, although it does share similarities with ideas related to cross-sector collaboration and it has emerged in prior research conducted at the case university. Anyway, the emergence of social responsibility as a major theme, and the lack of treatment it gets in the theory, raises a few questions. Do companies in Finland just happen to be socially responsible? Do the companies in question just happen to

have responsible values? Is the whole concept so self-evident that it does not require to be investigated in the theory?

There is also another angle to this. In the theory, the motives for collaboration were driven by the possibility to obtain financial gain or to get access to different types of competences (see e.g. Dooley & Kirk, 2007; Siegel et al., 2003). The preconditions for collaboration, on the other hand, dealt with aspects such as personal relationships or characteristics of different sectors (Schartinger et al., 2002). However, the existing literature that ignores the responsibility point of view focuses extensively on research collaboration. This, as well as the results of this study, may indicate that the aspect of social responsibility is important, but its importance is mainly limited to student co-operation.

Whatever the reasons are, the outcome remains the same: companies feel that they have a responsibility to engage in collaboration. Indeed, as the responsibility was many times closely linked to the benefit of students, this finding is rather important and hopeful from the student perspective.

In addition to the five key aspects of student co-operation, two more or less supporting factors emerged: career days and student associations. As career days are heavily associated with recruiting and hence were addressed earlier, this paragraph briefly discusses the role of student associations. Indeed, every case company collaborated with student associations. For the companies, student associations provided an easy channel through which they could interact with students. In practice, collaborations consisted of small events that the companies held, company visits, or sponsoring, for example. This is something also the university might want to tap into, especially since the collaboration is also educational. Naturally, collaborations involving the university or student associations are different by nature and serve different purposes and there is no need to bring them together in that sense. However, getting involved in these types of collaborations might yield benefits for the university, too. Moreover, if companies feel that they can fulfil their educational purposes through student associations, they may not have such a strong need to collaborate in education with the university.

So far, the chapter has focused exclusively on the perspectives of companies and students, thereby answering the main research question and the first sub-question. The following paragraphs provide answers to the second sub-question, the role of faculty personnel in collaboration. This part of the discussion is dealt with separately, as the answers in the personnel survey did not revolve so much around the same themes as the other survey or the interviews did. Additionally, neither the interviewees nor the students directly discussed the role of faculty staff.

Most faculty personnel collaborate with companies, either on their own or the companies' initiative. The collaborations include both research collaboration and student co-operation, and the proportions are quite even. The main reason for faculty staff to engage in student co-operation was to give students some working life relevance in their studies. Student co-operation also took place quite often; most respondents collaborated several times a year, many even more frequently. This, along with the fact that both sides engage in communication rather actively and that most communication takes place through personal contacts, would imply that collaboration (and communication) *on an individual level* is in decent shape. This finding contributes to the story existing literature (e.g. D'Este & Patel, 2007; Gunasekara, 2006) also tells; individual factors of researchers and academic staff alike have a significant impact on the state of the collaboration. The implication of this would be that if there is a good "match" between an individual university staff member and an individual company representative, the collaboration works well which, most importantly, benefits the student in the centre of the collaboration.

As the analysis showed, some companies and some university departments are very close to each other. However, the same companies struggled to collaborate with other departments because the personal ties were not that strong. This puts students of different fields in an unequal position. Some sort of systematic structure for student co-operation would be meaningful also in this sense. However, having a systematic structure, or a contact person within a department may not necessarily help, unless every contact person has equal rights and power to make decisions. In light of this, a common structure or a contact person for the whole university would be better. However, as discussed, there are reasons why universities may want to avoid this situation as well.

Overall, it seems that faculty personnel play an important role in the practical realization of student co-operation, albeit most likely this concerns collaboration in education only. One aspect might diminish this importance, though. As some companies wanted to take part, and some indeed took part, in decision making on a higher level, the opinions of a single staff member may be disregarded.

Finally, before addressing the limitations of the study and suggestions for future research, a few remarks about the practical implications of the results are made. Indeed, there are many parties who will benefit from the results of this thesis. Naturally, the stakeholders within University of Oulu will receive new information and data, but in general, all university actors who have interest in this type of topic may find the findings of this thesis beneficial. Additionally, companies that interact with universities as well as any other stakeholders who plan on collaborating with universities can refer to this thesis if they want to obtain basic knowledge of student co-operation, students' perceptions, or get some ideas about how to implement collaborations in practice.

5.2 Limitations and suggestions for future research

This chapter goes through some limitations concerning this study, as well as gives some ideas for further research.

Firstly, as it has become evident during the making of this thesis, the research in the Finnish context is rather scarce, and much of the literature is based on university–industry relationships somewhere else than Finland. Many countries, including the US and EU countries, have different ways of organising higher education and some foreign universities may not be directly comparable to Finnish universities. However, this is not a limitation per se, but it is something to keep in mind when comparing the results.

Pesti Career Day as a single event was very heavily present in many responses of the student survey. Students said to have seen companies' on-campus presence extensively during that event, and it was also a major event in which students had participated. This may or may not be related to the fact that the student survey was conducted

approximately a month after Pesti Career Day. Therefore, it is possible that the event was fresh in students' minds when they were answering the survey.

After the interview data was collected, it became clear that branding would be one of the bigger themes in the whole study. While the emergence of branding was not unexpected (the topic was discussed in the theory and taken into account in the interview questions), its significance perhaps was. Had this been known, the interview questions could have been modified so that they included more specific and in-depth branding-related aspects. This brings us to the major suggestion this study has to offer for future research: a similar study could be conducted from a branding point of view only. It would be especially interesting to look into the perceptions that companies have on the successfulness of their branding activities among students. Based on this study, companies seem to be rather uncritical when it comes to branding at the university. It would be interesting to find out how, and if, they see the negative aspects of branding.

Additionally, another avenue for future research emerged: companies' perceptions about social responsibility in student co-operation. Interestingly, social responsibility can hardly be considered as student co-operation per se, not at least in the same sense as recruiting, influencing, or even branding. It is not an enabler or a barrier, such as communication, either. Still, it is yet another reason for companies to engage in collaboration. As elaborated earlier, social responsibility might be more significant aspect for companies when they engage in student co-operation, rather than in research collaboration, for example. Nevertheless, it would be interesting to understand more about the subject. The topic might also be something to think about from a cross-cultural perspective.

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Appendix 1**INTERVIEW GUIDE**

1. How do you collaborate with universities in general?
2. What is important about the collaboration?
3. What is the significance of universities to your company?
4. How do your collaborations relate to students?
5. Do you have long-term goals regarding collaboration or are collaborations more or less random by nature?
6. Why do you essentially engage in collaboration?
7. How do you aim to achieve your goals?
8. What kind of employer brand do you want to build at the university?
9. What do you think about visibility at the university?
10. What has it been like to collaborate with University of Oulu, especially the student co-operation?
11. How do you see University of Oulu enabling collaboration?
12. What (type of) channels do you use when contacting the university?
13. Who takes the initiative in collaboration?
14. How could collaborations be developed?
15. What would you wish from University of Oulu in order to make the collaboration as smooth as possible?
16. Are you willing to use resources to advance the collaboration, and if, what kind of resources?
17. Do you collaborate with other stakeholders at the university?
18. Can you give examples of efficient and well-working collaborations that you engage in with other organisations than the university?

Appendix 2**STUDENT SURVEY****Survey: student perspective on university–industry collaboration**

This survey is part of a master's thesis, results of which are used to help in developing the company collaboration and career service activities of University of Oulu. The survey is aimed at degree students (bachelor's or master's).

Background

1. What is your field of study?
2. Which degree are you pursuing at the moment?
3. How long have you been studying at University of Oulu?

Survey

4. In what kinds of situations or channels have you encountered companies at the university? In what ways (e.g. in which channels) would you like companies to approach students?
5. Can you give examples of the last three situations when you have seen companies or experienced company activities at the university? Has any particular company caught your attention, and why?
6. In what events held at the university have you participated, that had companies present? Has it been of benefit to you?
7. How do you feel about companies having presence or being visible at the university?
8. Would you like to do a thesis (bachelor's or master's) for a company or other third party, and why?
9. What kind of working life -related activities would you like to see at the university?
10. What could University of Oulu do to help you to get into working life?
11. What could Oulu area companies do to help you get into working life?

Appendix 3**STAFF SURVEY****Survey on company collaboration to faculty personnel**

1. What is your faculty?
2. Have companies contacted you regarding collaboration or have you been contacting companies? If yes, what kind of collaboration has it been about (e.g. research/teaching/other)?
3. Have the abovementioned plans of collaboration actually been realised?
4. Do you engage in *student-related* collaboration with companies? If yes, what type of collaboration is that?
5. Why, or for what reasons, do you collaborate with companies, when that collaboration somehow relates to students?
6. How frequently do you engage in student collaboration with companies (e.g. guest lectures/thesis work etc.)?
7. Is the collaboration short-term or long-term by nature?
8. Do you hear your colleagues talk about company collaboration? Is there discussion in your faculty about the subject?
9. Other comments or regards to the actors responsible for company collaboration within University of Oulu: