Stepping across disciplinary and organisational borders – stories from a university's collaboration initiative

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## Abstract

The complexity of the world's problems has led to an increasing call for interdisciplinary research collaboration, and collaboration across disciplinary borders has received a prominent role in the strategy of universities today. However, the silo structure, which is typical for universities, does not support this development, and more solutions are needed in order to initiate research collaboration across the disciplinary and organisational borders of universities. The objective of this research was 1) to examine how the initiation of collaboration is enabled or hindered in university efforts to initiate collaboration across disciplinary and organisational borders and 2) to develop suggestions for supporting the initiation phase of research collaboration in universities.

Despite scholars' increasing interest in interdisciplinary research collaboration, there is still no coherent literature on the process leading to the formation of research collaborations. In this thesis, I develop a new framework for the initiation process of research collaboration across disciplines, where the researcher's decision to engage in collaboration is situated as a central element. This framework focuses on research collaboration within the university context and connects the drivers and barriers of interdisciplinary research collaboration to a stage model for practices of interdisciplinary research.

Applying an ethnographic approach, I examined a collaboration initiative of Aalto University from an insider's perspective and investigated how actors taking part in the initiation of research collaboration enable and hinder the initiation of collaboration across disciplinary and organisational borders. Data was gathered from various sources during the planning and execution of the initiative. As a result of a thematic analysis, nine factors that enable the initiation of collaboration were identified. I describe these factors through ethnographic stories that shed light to the events affecting the initiation phase of collaboration.

The findings of this study emphasize the role of interaction in the initiation of research collaboration and suggest that the organisers of a collaboration initiative create an arena where the participants and presenters of the initiative interact and construct enabling factors for the initiation of collaboration. Based on the findings, I formulated practical recommendations for the university's organisers of collaborative initiatives. The findings contribute to the scarce existing literature and understanding of the process leading to research collaboration and indicate future avenues for research.

**Keywords** research collaboration, initiation of research collaboration, interdisciplinary research, drivers and barrier of interdisciplinary research

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**Tiivistelmä**

Globaalien haasteiden monimutkaisuus on johtanut tieteidenvälisen tutkimuksen kasvavaan tarpeeseen, ja tieteiden rajat ylittävällä tutkimuksella onkin nykyään merkittävä rooli yliopistojen strategiassa. Yliopistoille tyypillinen organisaation siilorakenne ei kuitenkaan tue tätä kehitystä, ja tutkimusala- ja organisaatiorajat ylittävän tutkimusyhteistyön syntymistä tukeville ratkaisuille on tarvetta. Tämän tutkimuksen tavoitteena on 1) tutkia kuinka tutkimusala- ja organisaatiorajat ylittävän yhteistyön syntyä mahdollistetaan tai vaikeutetaan yliopiston toimissa lisätä tutkimusyhteistyötä ja 2) kehittää ehdotuksia tämän vaiheen tukemiseksi yliopistoissa.

Vaikka tieteidenvälinen tutkimusyhteistyö on ollut kasvava tutkimusalue 2000-luvulla, tutkimusyhteistyön syntyyn johtavaa prosessia ei ole johdonmukaisesti tutkittu. Kehitän vallitsevan tutkimuksen pohjalta tieteidenvälisen tutkimusyhteistyön syntyyn johtavalle prosessille uuden viitekehyksen, jonka keskiössä on tutkijan päätös ryhtyä tutkimusyhteistyöhön. Tämä viitekehys keskittyy tutkimusyhteistyöhön yliopistoissa ja siinä yhdistetään uudella tavalla tieteidenvälisen tutkimuksen vaikuttimet ja esteet sekä vaiheittainen malli tieteidenväliselle tutkimusyhteistyölle.

Tarkastelin sisältä käsin Aalto-yliopiston yhteistyöaloitetta etnografista lähestymistapaa soveltaen ja tutkin, kuinka tutkimusyhteistyön synnyttämiseen osallistuvat toimijat mahdollistavat tai vaikeuttavat tutkimusala- ja organisaatiorajat ylittävän yhteistyön syntyä. Tutkimusaineisto kerättiin monenlaisia lähteitä hyödyntäen yliopiston yhteistyöaloitteen suunnittelu- ja toteutusvaiheiden aikana. Temaattisen analyysin tuloksena tunnistin yhdeksän tutkimusyhteistyön syntyä mahdollistavaa tekijää. Nämä tekijät esitellään etnografisten tarinoiden kautta, joissa kuvaillaan yhteistyön syntyvaiheeseen vaikuttavia tapahtumia.

Tutkimuksen tulokset painottavat vuorovaikutuksen roolia tutkimusyhteistyön synnyssä, ja tulosten perusteella esitän, että tapahtumamuodossa toteutetun yhteistyöaloitteen järjestäjät luovat areenan, jolla tapahtuman osallistujat ja esiintyjät rakentavat yhteistyötä mahdollistavia tekijöitä. Tulosten perusteella esitän vastaavien yhteistyötä tukievien tapahtumien järjestäjille käytännön suosituksia, joiden keskiössä on tukea yhteistyön syntyä mahdollistavien tekijöiden rakentuminen. Tutkimuksen tulokset lisäävät ymmärrystä tieteidenvälisen tutkimusyhteistyön syntyyn johtavasta prosessista ja osoittavat uusia suuntia tulevalle tutkimukselle.

**Avainsanat** tutkimusyhteistyö, tutkimusyhteistyön synty, tieteidenvälinen tutkimus, tieteidenvälisen tutkimuksen vaikuttimet ja esteet

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# 1 Introduction

The world's biggest problems will not be solved in silos. Instead, addressing those ever more complex problems requires collaboration across organisational and disciplinary borders. This has been acknowledged in universities, where research collaboration between disciplines has been increasingly promoted. However, there are still barriers for researchers to collaborate across disciplines. In this thesis, I explore the initiation of research collaboration across disciplinary and organisational borders within a university to provide insights into an area that is still a large gap in literature on research collaboration.

There has been an increasing call for interdisciplinary research collaboration among scholars, policy and higher education institutions (Leahey 2016). Research that combines theories and approaches from various disciplines has potential to contribute to a more sustainable environment, health, new technologies and better understanding of the world where we live in (Buanes and Jentoft 2009; National Academies 2005). In addition, interdisciplinarity has been connected to innovation, creativity and "all things progressive" in research (Rhoten & Parker 2004; Siedlok & Hibbert 2014), so it is not surprising when studies indicate that interdisciplinarity has been embraced as a strategy in universities in the 21$^{st}$ century (Sá 2008). Furthermore, this development has been supported by new policies and funding structures (Buanes and Jentoft 2009; Sá 2008).

In addition to increasing interest in interdisciplinarity, there has been a shift to collaborative ways of working in scientific research in general, and much has been written about research collaboration in literature on organisations and management, research policy and higher education (Leahey 2016; Siedlok & Hibbert 2014). However, research collaboration is still a vague concept and there is no comprehensive theory of the topic (Lewis et al. 2012; Shrum et al. 2007).

Even though research collaboration across disciplines has been an increasingly prominent topic in scientific research, Siedlok and Hibbert (2014, p. 195) state that "the determinants and processes of interdisciplinary collaboration remain under-researched, with a number of questions about how to organize and manage such collaborations remaining unanswered". These under-researched areas include the initiation phase of interdisciplinary research collaboration, which is the gap where this study focuses on. There is little research focusing on this aspect of interdisciplinary research collaboration, so this study aims to explore uncharted waters.

Aalto University is an example of a university that was established with an idea that different disciplines brought together create innovation. In 2010, the Helsinki School of Economics, Helsinki University of Technology and the University of Art and Design Helsinki merged, and Aalto University was created to make positive changes to the society by bringing together science, design and business thinking (Aalto 2015). Today, it has been 10 years since Aalto University was established and collaboration across disciplines continues being strongly integrated into the mission and strategy of the university.

However, even for a university established for collaboration between disciplines, there are challenges for researchers and students in collaborating across disciplinary borders. These include challenges that are specific for interdisciplinary research (Siedlok & Hibbert 2014). In addition, working across disciplines often means working across organisational borders. Organisational borders within a university follow traditionally disciplinary borders, which contributes to departments and schools forming silos within a university (Sá 2008). Stepping outside these silos to collaborate with other disciplines requires extra effort from the researchers and students.

My studies and work at Aalto University opened an opportunity to observe the university's initiative to foster research collaboration from an insider's perspective and as an ethnographic researcher. There was a strategic intent to foster collaboration across department and school borders, and the leaders of the Business School set in motion an initiative to do this. I was assigned to work in the initiative as an assistant. I had also previously gained understanding from the perspectives of different schools when working in various projects of the university, so this opportunity opened a unique insider's window to the initiation phase of collaboration across disciplinary and organisational borders.

The starting point of this research was a practical problem: how can a university foster the initiation of research collaboration across disciplinary and organisational borders? Existing literature on interdisciplinary research collaboration has not coherently addressed the initiation phase, where researchers explore collaboration possibilities and have not yet decided whether to collaborate or not or with whom, and the process leading to the initiation of research collaboration is a gap in literature. The collaboration initiative of Aalto University opened an opportunity to observe how different measures and actions taken in a university initiative support or hinder the collaboration objective of the university. Thus, the objective of this research was to explore this under-researched

initiation phase of research collaboration. More specifically, the objective was 1) to examine how the initiation of collaboration is enabled or hindered in university efforts to initiate collaboration across disciplinary and organisational borders and 2) to develop suggestions for supporting the initiation phase of research collaboration in universities.

The research problem considers what it is that people (here: organisers and researchers participating in a collaboration initiative) do that enables or hinders the creation of research collaboration. Even if it is university's strategic intent to foster collaboration, researchers are independent actors who decide whether they engage in a collaboration or not (Kezar 2005). The roles of actors are emphasized, because of the central role of individual researchers and also in order to discover how universities can influence the initiation of collaboration, there is a need to investigate what the roles of actors are in influencing the initiation of collaboration. The research question formulated to address this problem was: how do actors taking part in the initiation of research collaboration enable and, on the other hand, hinder the university's objective of initiating collaboration across disciplinary and organisational borders?

The structure of the thesis is the following. First, I discuss literature on research collaboration in higher education institutions, disciplinary integration and the challenges of interdisciplinary research. Then, I explain my methodological choices and describe the data collection and analysis. After that, I introduce the findings and discuss them in relation to previous literature and present practical recommendations for universities. Finally, I conclude with suggestions for future research.

# 2 Literature review

In this section, literature on research collaboration across disciplinary and organisational borders is discussed with a focus on interdisciplinarity and higher education institutions. First, collaboration is defined in the context of research in higher education institutions. This is followed by discussions on different types of disciplinary integration and research collaboration as a process. Then, existing research on factors affecting researcher's decision to engage in interdisciplinary collaboration are investigated. Finally, the actions and a new framework for higher education institutions to initiate interdisciplinary research collaboration are discussed.

## 2.1 Collaboration across borders in higher education institutions

Research collaboration takes many forms in higher education institutions, but especially collaboration across disciplines is much called for (National Academies 2005; Siedlok & Hibbert 2014; Rhoten 2004). However, the process leading to research collaboration across disciplines is still in need of further research, and in this thesis, the initiation phase of that process is explored. In the context of collaboration across disciplines, the word interdisciplinary often comes up. However, the term is complex, and often mixed with the terms multidisciplinary and transdisciplinary (Huutoniemi 2010; Siedlok & Hibbert 2014).

Next, research collaboration and how it has been studied is discussed in the context of higher education institutions. Then, the terms interdisciplinary, multidisciplinary and transdisciplinary research are discussed to shed light to the different types of disciplinary integration in research collaboration. Lastly, Siedlok et al.'s (2015) stage model for research collaboration is discussed in connection to the objectives of this thesis.

### 2.1.1 Defining research collaboration in higher education institutions

Collaboration has been studied from various perspectives and in various fields. Much has been written about collaboration from the perspective of research collaboration and, according to Leahey (2016), this has been a result of the shift to collaborative ways of working in scientific research. However, research collaboration is still a vague concept and there is no comprehensive theory of the topic (Lewis et al. 2012; Shrum et al. 2007). With a focus on research collaboration within higher education institutions, I discuss

collaboration using the lens of organisation and management studies literature on collaboration while drawing from a range of studies from research policy and higher education literature. Next, research collaboration is discussed from the perspectives of intraorganisational and interorganisational literature, the definition of collaboration, the types of research collaboration and micro and macro levels in research collaboration.

*Intraorganisational vs interorganisational*

Literature on collaboration is often divided into intraorganisational, i.e. internal, and interorganisational, i.e. external, collaboration in organisational studies literature (Kezar 2005). Different types of collaboration, such as collaboration in research or education or collaboration with external partners, takes place in higher education institutions. In this thesis, I focus on research collaboration across disciplines, especially within a university, which can be approached both as intraorganisational and interorganisational collaboration. This is because interdisciplinary research collaboration takes place inside organisational borders of a school or the whole university, but it may also cross organisational borders, such as the borders of different schools or departments in a university. In addition to organisational borders, disciplinary borders are crossed. Disciplines can be seen as institutions (Buanes & Jentoft 2009), and from that perspective also institutional borders need to be crossed in interdisciplinary research collaboration.

*The definition of collaboration*

Definitions for collaboration vary and, in organisation and management literature, collaboration is sometimes used as a synonym to terms, such as cooperation and coordination. However, the terms have different definitions. For instance, Salvato et al. (2017, p. 963) define collaboration as an "umbrella term", which is "generally used to refer the act of working together by two or more persons to accomplish something". According to Salvato et al (2017), coordination focuses on how working together is performed and cooperation focuses on why people work together. Collaboration is the term typically used in the context for collaboration between researchers, including popular terms such as research collaboration, interdisciplinary research collaboration and scientific collaboration.

A widely cited definition for collaboration is developed by Wood & Gray (1991): "Collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain." In this thesis, this group of autonomous stakeholders is

two or more researchers who engage in a mutual research project. However, in research collaboration which involves more than one discipline, the extent to which the "rules, norms and structures" are shared varies depending on the way disciplines are integrated in the collaboration (Siedlok & Hibbert 2014). These differences in disciplinary integration are discussed in the section: 2.1.2 Disciplinary integration.

*Types of research collaboration*

There are different ways in which research collaboration occurs. For instance, Leahey (2016) identifies a type of research collaboration that aims at extending and complementing and another, a more individualistic type, that aims at reinforcing the areas of expertise (Leahey 2016). Also, Leahey (2016) identifies the mentoring style, which involves collaboration with or through students. Furthermore, research collaboration can take place across countries, higher education institutions, public and private domains of science as well as disciplines. In this thesis, the focus is on different types of research collaboration that takes place between individual researchers from different disciplines within a higher education institution. The different types of disciplinary integration in research across disciplines are discussed in the section 2.1.2.

*Micro and macro levels*

Research collaboration can be viewed at micro and macro levels. At the micro level, individual researchers are the ones working together and collaborating, which makes them a central element in the literature on collaboration (see for instance Van Rijnsoever & Hessels 2011). Another element is the social aspect of research collaboration. The ways of working are ever more social in academic research and researchers work together in research teams (Leahey 2016), even though there are differences between disciplines in the eagerness and need to collaborate (Mellin 2000). The social aspect of research collaboration is emphasized for instance by Lewis et al. (2012, p. 695), who state that research collaboration can be seen "as a social activity that takes place within institutional contexts, rather than as a purely rational actor strategy to maximize productivity".

At the macro level, universities and policy makers have an interest in making research collaboration happen, as elaborated in the introduction. However, some of the institutional structures and tools support while others act as barriers to collaboration. Research suggests that the traditional structures of universities do not support collaboration (Kezar 2005; Sá 2008). According to Sá (2008), a popular suggestion in academic communities and policy

is that structural changes need to be made at universities in order to support research collaboration across organisational and disciplinary borders.

University context has its own unique characteristics compared to other organisational contexts. For instance, according to Kezar (2005), a difference to corporate environment is that, within higher education context, collaboration cannot be mandated from the hierarchy, but instead, people need to be convinced and commitment created. Kezar (2005) identifies this process to be similar to the processes of inter-organisational collaboration.

## 2.1.2 Disciplinary integration: inter-, multi- and transdisciplinary research

Disciplines can be described as communities. According to Klein (1990), these communities have specific worldviews, which affect for instance the questions asked, methods and concepts used as well as the criteria for validity and truth. There is a variety of reasons to cross the disciplinary boundaries of these communities, such as addressing problems that are beyond the scope of a single discipline. These reasons may lead to interdisciplinary, multidisciplinary or transdisciplinary research. The differences of these three terms are discussed in this section.

'Interdisciplinary' is the term that is mostly used in literature on research collaboration across disciplines. However, as Siedlok & Hibbert (2014) point out, the term 'interdisciplinary' has been used imprecisely in the literature and often it has not been clearly distinguished from the terms multidisciplinary and transdisciplinary. One reason for this might be, that defining interdisciplinary in research is tricky because of the complexity of interdisciplinary research (Huutoniemi 2010).

Interdisciplinary research is not the same thing as collaboration. Yet, Klein (2017) states that complex problems have underlined the importance of teamwork and this has strengthened the connection between interdisciplinary research and collaboration. Interdisciplinary research can be done by one person or a research collaboration. For instance, Buanes and Jentoft (2009) view interdisciplinary research as research conducted by an individual researcher or a research group. However, some definitions assume the engagement of more than one researcher. For instance, Siedlok and Hibbert (2014) define interdisciplinary research as "a complex, intermediate level of integration that may occur between individual scientists, between scientists and their organisations and among different disciplinary communities involved in the research". This thesis is concerned on

research collaboration across disciplines instead of research done by an individual researcher, which is consistent with Siedlok and Hibbert's (2014) view on interdisciplinary research.

Distinctions can be made between different types of interdisciplinary research, even if this is rare. Lyall et al. (2011) make a distinction between two interdisciplinary approaches: academically oriented interdisciplinary research and problem-focused interdisciplinary research. The academically oriented type of interdisciplinary research occurs when the limits of the discipline are met, and new insights are needed from other disciplines. Problem-focused type of interdisciplinary research addresses for instance problems with social or technical relevance and, with this type of interdisciplinary research, outputs related to the discipline are less relevant.

Siedlok and Hibbert (2014) define interdisciplinary research as being about connection and collaboration. Their simple definition for interdisciplinary research is "a mode of research that transgresses traditional disciplinary boundaries". However, a more precise description is needed to understand the difference to multidisciplinary and transdisciplinary research.

As with interdisciplinary research, the definitions of the terms transdisciplinary and multidisciplinary research somewhat vary. For instance, Foreman (2017) argues that interdisciplinarity and transdisciplinarity have had different meanings and served as boundary objects. However, the different definitions of the three terms contain certain similar elements. Table 1, which has been constructed based on Siedlok and Hibbert's (2014) definitions, visualizes the differences between these terms.

The difference between interdisciplinary, multidisciplinary and transdisciplinary research collaboration is connected to how the disciplines collaborate, and this is connected to the effects this collaboration has on the disciplines themselves (Siedlok & Hibbert 2014). Based on how disciplines interact in these different types of research collaboration, interdisciplinary research can be placed between multidisciplinary and transdisciplinary research (Buanes & Jentoft 2009), as in the table 1.

*Table 1. Differences in multidisciplinary, interdisciplinary and transdisciplinary research, based on Siedlok & Hibbert (2014) definitions*

|  | **Multidisciplinary research** | **Interdisciplinary research** | **Transdisciplinary research** |
|---|---|---|---|
| Research approach | Disciplines use their own approaches | The approaches of disciplines are synthesized | The disciplines are radically integrated |
| Research goals and outcome | Disciplines have aligned but separate goals | Disciplines have shared goals and collective outcome | Fusion of disciplines have a mutual goal and outcome |
| Disciplinary boundaries | Disciplinary boundaries exist | Disciplinary boundaries exist | Disciplinary boundaries are reshaped or not relevant |
| Disciplinary integration | Possibly temporary knowledge exchange and borrowing between disciplines | The disciplinary integration depends on the context and process | Might result in the development of new disciplines |

Research approach, goals and outcome clearly separate interdisciplinary research from multidisciplinary research. According to Buanes and Jentoft (2009), interdisciplinary research looks at an issue with shifting perspectives employing several aspect visions and having an ambition of developing new ones. In multidisciplinary research disciplines are further away from each other; disciplines use their own approaches, and the issue is studied separately from different perspectives (Buanes & Jentoft 2009; Klein 2017; Lyall et al. 2011; Siedlok & Hibbert 2015). In addition, a multidisciplinary research project has aligned, but separate goals, whereas the goals are shared and outcome collective in interdisciplinary research (Klein 2017; Lyall et al. 2011; Siedlok & Hibbert 2014).

Transdisciplinary research is on the other end of the spectrum from multidisciplinary research: there disciplines are integrated with an attempt to move beyond disciplines, and the result is a fusion of disciplines (Buanes & Jentoft 2009; Lyall et al. 2011; Siedlok & Hibbert 2014). According to Siedlok and Hibbert's (2014) definition, interdisciplinary research differs from transdisciplinary research in how boundaries between disciplines exist in the collaboration. Even though perspectives of the disciplines are combined,

disciplinary boundaries exist in interdisciplinary research, whereas disciplinary boundaries are reshaped or not relevant in transdisciplinary research (Lyall et al. 2011; Siedlok & Hibbert 2014).

Interdisciplinary, multidisciplinary and transdisciplinary research are all different from each other in the way that disciplinary integration occurs in research collaboration. In multidisciplinary research, there is no integration, only cooperation, temporary borrowing and knowledge exchange between disciplines (Lyall et al. 2011; Siedlok & Hibbert 2014). This definition entails that multidisciplinary research does not challenge existing academic structures or researchers' worldviews (Lyall et al. 2011). In transdisciplinary research, on the other hand, the integration is more profound and disciplinary boundaries and academic structures are not relevant (Lyall et al. 2011; Siedlok & Hibbert 2014). This might even lead to the development of new disciplines. Interdisciplinary research is between the other two; the level of disciplinary integration varies depending on the durability of context – from research project to community – and integration process – from knowledge exchange to knowledge creation (Siedlok & Hibbert 2014). According to Lyall et al (2011), interdisciplinary can affect the worldviews of the researchers as well as the existing academic structures.

Instead of multidisciplinary and transdisciplinary research, interdisciplinary research is the term mostly used in the literature on research collaboration. In the section 2.2., I use the term 'interdisciplinary'. This is not because the issues discussed in that section could not be applied also to multidisciplinary or transdisciplinary research, but simply because literature concerning challenges of research collaboration across disciplines is focused on using the term 'interdisciplinary research' and this thesis draws from that literature.

## 2.1.3 Stage model for research collaboration across disciplines

Research collaboration can be viewed as a process (Kezar 2005, Siedlok et al. 2015). For instance, Siedlok et al. (2015) introduce a stage model for collaborative interdisciplinary research practices (see figure 1). Instead of a more common perspective of looking at the structures of organising interdisciplinary research collaboration, Siedlok et al. (2015) study the more "bottom-up" emergence of collaborative communities and divide collaborative practices into three stages, which are the practices of enquiry, engagement and enactment.

According to this model, the first stage of collaboration is enquiry, the exploratory stage of engaging in collaborative interdisciplinary research. At this level, individuals are still not sure how or if they are going to engage in collaboration, and the practices include risk taking, exploring, seeking opportunities, searching for connections and unpacking the problem. Practices of engagement and enactment are the stages after the initial, exploratory stage in collaborative interdisciplinary research. At the engagement stage, the individuals have reached the stage where they are practicing together towards a collaborative community, e.g. engaging as well as investigating and building fit. At the final stage, practices of enactment, a community has been formed. The practices at the final stage include involving others and brokering connections (Siedlok et al. 2015).

When formulating the model, Siedlok et al. (2015) studied university's collaboration initiatives and situated them in the model. The university's initiatives to support the first phase of collaboration are situated on the stage of 'practices of enquiry' of the model by Siedlok et al. (2015). According to Siedlok et al. (2015), the initiatives of the enquiry stage includes events, such as a university research day.

| Practices of enquiry | Practices of engagement | Practices of enactment |
|---|---|---|
| • Risk taking<br>• Exploring<br>• Seeking opportunities<br>• Searching for connections<br>• Unpacking the problem and upframing | • Engaging<br>• Investigating fit<br>• Building fit<br>• Accommodating<br>• Providing focus<br>• Project tasking | • Maintaining procedural justice<br>• Nurturing<br>• Involving others<br>• Brokering connections |
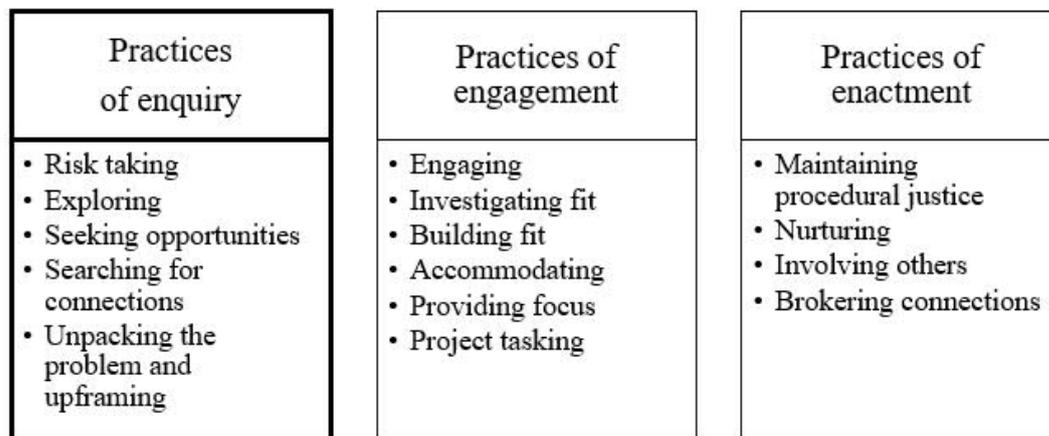
*Figure 1. Stage model for practices of interdisciplinary research collaboration (Siedlok et al. 2015)*

The model of Siedlok et al. (2015) is developed especially for the emergence of a collaborative community. However, I argue that it can be adapted also to other types of research collaboration across disciplines, because the practices of the model are general to research collaboration instead of typical only to collaborative communities of interdisciplinary research.

The focus in this thesis is the first enquiry stage of interdisciplinary research collaboration in the university context – a stage which takes place before actual collaboration starts and where collaborations are initiated. More specifically, the process leading to the enquiry stage and from there to the next stage are central in this thesis. The relationship of the model presented in figure 1 to the framework developed in this thesis is discussed in more detail in the section 2.3.2.

## 2.2 Researcher deciding to collaborate across disciplines

Several factors, including organisational structures, disciplinary differences and personal motivations, have been identified in studies on interdisciplinary research to guide researchers towards or away from doing interdisciplinary research. Understanding the drivers and barriers is key of initiating and facilitating interdisciplinary research collaboration in higher education institutions. In this section, I discuss literature on the unique factors affecting researchers who ponder whether to engage in research collaboration across disciplinary boundaries. First, I discuss who the researchers are who engage in interdisciplinary research and what the main drivers are behind them. Second, I discuss the literature covering the barriers to interdisciplinary research collaboration.

### 2.2.1 The characteristics of an interdisciplinary researcher

In the literature about interdisciplinary research, certain factors and characteristics have been identified to associate with researchers who do interdisciplinary research. These factors include personal motivations, years of experience, discipline and even gender (Van Rijnsoever & Hessels 2011).

The characteristics that are associated with researchers who engage in interdisciplinary collaboration include researcher's years of experience and work experience in governmental organisations or firms. According to Rhoten and Parker (2004), young researchers are especially willing to do interdisciplinary research collaboration, even though they are also most likely to associate negative career development with doing interdisciplinary research. However, there are also contrary findings. For instance, according to Van Rijnsoever and Hessels (2011), more years of working in research is connected to both to interdisciplinary and disciplinary collaboration. Van Rijnsoever and Hessels (2011) also state that working in companies or governmental organisations is

positively related to engaging in interdisciplinary research collaboration while it decreases the tendency of engaging in disciplinary research collaboration

It is even suggested that there might be gender differences in how much researchers engage in interdisciplinary research. In the study of Van Rijnsoever and Hessels (2011), focusing on learning styles, work preferences, and career behaviours, and the study of Rhoten and Pfirman (2007) about factors associated with interdisciplinary research, there is a statistical indication that female researchers engage more in research collaborations across disciplines. However, the reasons behind these findings remain unconfirmed.

Researchers from certain disciplines seem to engage in interdisciplinary research collaborations more than from other disciplines, and there are differences in how collaboration takes place within different disciplines (Lewis et al. 2012; Melin 2000; Van Rijnsoever & Hessels 2011). According to the study of Van Rijnsoever and Hessels (2011), researchers engage more in interdisciplinary collaborations in disciplines that are strongly connected to practical implications, such as human geography and medicine, than in disciplines such as physics and chemistry.

## 2.2.2 Drivers of interdisciplinary research

The drivers of interdisciplinary research go beyond the individual researcher: in addition to personal motivations the drivers include institutional factors as well as drivers connected to the complexity of problems and the specialization of disciplines.

*Complexity and specialization as a driver*

Certain drivers have been identified to foster interdisciplinary research. These drivers include the specialization of researchers and the complexity of problems that need to be solved. The problems that attract researchers' attention are ever more complex. Solving these complex societal and technical problems of today requires research that is not restricted to a single discipline, and this acts as an important driver to interdisciplinary research (Leahey 2016; National Academies 2005; Siedlok & Hibbert 2014). On the other hand, specialization can be seen as a driver as the complex issues cannot be thoroughly addressed by an individual researcher or field. Specialization is one of the most often cited drivers of research collaboration in general, even though its role as a driver has been also questioned (Leahey 2016).

*Personal motivations as a driver*

Personal motivations have also been identified to play an important part as drivers of interdisciplinary research. According to Siedlok and Hibbert (2014), motivational factors for engaging in interdisciplinary research collaborations include personal reasons, including intellectual curiosity and the promise of novelty, which "pull" researchers to interdisciplinary research. For instance, Rhoten and Parker (2004) suggest that young researchers are especially interested in engaging in interdisciplinary research collaboration because of societal benefits. In addition, "push" effect can be caused by researcher frustrating with their discipline's limits (Siedlok & Hibbert 2014).

*Institutional factors as a driver*

In addition to complex research problems and personal motivations, institutional factors, such as policy support, have been identified as drivers of interdisciplinary research. According to Leahey (2016), policy, universities and research centres promote collaboration. However, the level of this promotion can be questioned because of the dominant structures in universities: according to Sá (2008), universities are not structured for collaboration as organisational borders follow traditional disciplinary borders which forms silos.

In connection to policy support for interdisciplinary research, Siedlok and Hibbert (2014) name "an assumption of creative potential" as a driver of interdisciplinary collaboration. The assumption of creative potential is about the view that interdisciplinary research leads to innovation and new ways of thinking and increases the quality and quantity of outputs. This is in line with Rhoten and Parker's (2004) argument that "interdisciplinarity has become synonymous with all things progressive about research and education".

Interdisciplinary research collaborations might also open some career development possibilities (Siedlok & Hibbert 2014). However, Van Rijnsoever & Hessels (2011) suggest that, from a career point of view, it might be more beneficial to engage in disciplinary than interdisciplinary collaboration.

## 2.2.3 Drivers of research collaboration

Above discussed drivers are drivers of doing interdisciplinary research. In addition to those, drivers of engaging in research collaboration are identified in existing literature. For

instance, Melin (2000) identifies personal and structural "background" drivers of research collaboration. According to Melin (2000), the structural causes include infrastructure for the movement of information and people, such as cheap flights and the internet, as well as research facilities and equipment. Sharing facilities and equipment also reduces costs and sharing expertise is beneficial for organisations (Leahey 2016; Melin 2000). Second, Melin (2000) states that personal background and social preferences of the researchers guide their decision to engage in research collaboration. For instance, Melin's (2000) study suggests that personal chemistry between researchers is a prerequisite for research collaboration. This is in line with the social aspect of collaboration, which is emphasized by some researchers, such as Lewis et al. (2012). In addition to the factors listed above, the importance of communication and knowledge-sharing is acknowledged in scientific communities.

Melin (2000) suggests that researcher's reasons to engage in collaboration depend on material, social and knowledge-based needs. This means that, according to Melin (2000), the reasons why researchers engage in collaboration include gaining access to equipment and methods (material) and to knowledge and skills (knowledge based). In addition, a long-time friendship is an example of social reason to engage in collaboration (Melin 2000). These material, social and knowledge-based needs of researchers can be also seen as drivers of research collaboration that are connected to the personal motivations of researchers.

Overall, there are important drivers that guide researchers to engage in interdisciplinary research and studies show that there is a wish to collaborate (Melin 2000; Rhoten & Parker 2004). These drivers discussed in this section above are presented in table 2. However, there are also barriers that affect the researcher's decision to engage in interdisciplinary research collaboration. Next, literature on these barriers is discussed.

*Table 2. The drivers and barriers affecting researcher's decision to do interdisciplinary research, with examples, adapted from Siedlok & Hibbert's (2014) categorization*

| DRIVERS | BARRIERS |
|---|---|
| **Institutional factors** | |
| - Career possibilities<br>- Policy support, "assumption of creative potential" | - Influence of funding structures<br>- Career-related barriers<br>- Rewards systems |
| **Complexity & specialization** | **Disciplinary communities** |
| - Solutions needed for complex problems | - Problems of understanding<br>- Disciplines as communities – tribal attitudes |
| **Personal motivations** | |
| - Intellectual curiosity<br>- Limits of a discipline, and other knowledge-based needs<br>- Material needs, e.g. equipment<br>- Social reasons, e.g. a long-time friendship | - Perceptions for career-development<br>- Time constraints<br>- Lack of necessary skills |

## 2.2.4 Barriers to interdisciplinary research collaboration

Table 2 visualizes that, in addition to drivers discussed above, there are barriers affecting researcher's decision to engage in interdisciplinary research collaborations and do interdisciplinary research. The categories of drivers and barriers are based on Siedlok and Hibbert's (2014) categorization. The original categories of Siedlok & Hibbert (2014) are: complexity, motivational factors, assumption of creative potential, institutional factors and differences in disciplinary tradition. However, more drivers and barriers have been identified in the literature and the categories have been modified accordingly.

Some of the factors in table 2, such as career possibilities, can be seen both as drivers and barriers to interdisciplinary research depending from perspective. In addition, factors in different sections are connected to each other; for instance, the complexity of problems might be connected to personal intellectual curiosity and institutional career-related barriers to personal perceptions for career-development. Next, literature on barriers to interdisciplinary research collaboration is discussed.

*Disciplinary communities as a barrier*

Some of the barriers to interdisciplinary research identified in literature arise from disciplines and the differences between them. One approach to examining this is seeing disciplines as communities, an approach that is emphasized for instance by Becher and Trowler (2001) and Buanes and Jentoft (2009). Becher and Trowler (2001) view disciplines as communities in an extent that they compare disciplinary communities to tribes and suggest that 'tribal' attitudes may arise between these communities. This 'us and them' attitude might reinforce the disciplinary silos which are at least partly maintained by the traditional organisational structure of universities. Becher & Trowler (2001) also state that as disciplines become more specialized, they move further away from each other. However, as discussed earlier, the specialization of disciplines can be also be seen as a driver to collaboration across disciplines (Leahey 2016).

Disciplines can also be seen as institutions. For instance, Buanes and Jentoft (2009) analyse disciplines as institutions based on Richard Scott's (1995) perspective, which includes seeing institutions resting on three pillars: the regulative pillar, the cognitive pillar and the normative pillar. According to this view, disciplines, like institutions, are made up of formal and informal rules and possess sanctions, and are institutionally embedded in organisations, such as universities. Disciplines also contain and are defined by specific knowledge, paradigms, methodological assumptions and traditions. Buanes and Jentoft (2009) argue that normative pillar is the one that mostly supports disciplinarity, because the norms and values of a discipline are not easily changed. According to Buanes and Jentoft (2009), interdisciplinary research shakes the institutional pillars, and this can be met with resistance.

The different values, norms and traditions of the 'disciplinary communities' discussed above are connected to problems of understanding. Siedlok and Hibbert (2014) identify problems of understanding as a barrier to interdisciplinary collaboration, and state that problems of understanding in a research collaboration might lead to distrust among team members. Buanes and Jentoft (2009) discusses a similar issue but use a term 'aspect vision' which they define as a particular set of lenses that are offered by a discipline for its members and that enable the members to see an issue more sharply. According to Buanes and Jentoft (2009), disciplines are formed around aspect visions and they have strong truth perceptions that are self-evident within disciplines, which affects communication and

understanding between disciplines. On the one hand, the aspect vision of disciplines can be seen as a reason for collaborating across disciplines, because then the aspects of different disciplines are combined and, thus, a fuller picture can be formed of an issue (Buanes & Jentoft 2009).

Overall, a set of barriers to interdisciplinary research discussed above arise from disciplines being separate 'communities' or 'institutions' which have differences for instance in norms, traditions and perspectives. This leads to distance between the disciplines and problems in understanding.

*Institutional factors as a barrier*

Even though the need for innovation and solutions to complex problems has led to policy support for interdisciplinary research, current institutional factors, such as the influence of funding structures and evaluation as well as career-related barriers, tend to work against genuine interdisciplinary collaboration (Sá 2008; Schuitema & Sintov 2017; Siedlok & Hibbert 2014). According to Siedlok and Hibbert (2014), the organisation of science, for instance reward systems, usually supports disciplinary instead of interdisciplinary research, while the requirement for interdisciplinary research collaboration by some funding agencies might cause pseudo-collaborations. There is an increase in interdisciplinary research projects and programmes as well appointments between departments at the university-level, but universities still fail to adapt to this increase fully. This can be seen as positions with double duties and departments not recognising all interdisciplinary activities valuable. In addition, according to Sá (2008), current evaluation and promotion criteria support disciplinary instead of collaborative and interdisciplinary research. Schuitema and Sintov (2017) also bring forth the issue that this affects especially young researchers.

So, it is acknowledged that university structures do not particularly support interdisciplinary collaboration (Rhoten 2004; Sá 2008). Sá (2008) traces the organisational problems of interdisciplinary research to the disciplinary-departmental forms of universities and the specialization of disciplines, which affects the organisational structures of universities, as well as to the professional societies, funding organisations and journals. At universities, this leads to a situation where departments form silos and researchers do not communicate between the silos and across disciplinary and organisational boundaries, which supports the barriers arising from disciplinary communities discussed above. In

addition, this nexus between disciplines and departments supports disciplinary career paths (Sá 2008), which is also related to the personal motivations of researchers discussed next.

*Personal motivations as barriers*

In addition to institutional factors, there are personal career-related barriers to interdisciplinary research collaborations that have been identified in literature. As mentioned above, institutional factors do not fully support interdisciplinary career paths. This is linked to the negative perceptions that researchers – especially early in their career – have about the effects of interdisciplinary research for their career development, which was identified for instance in a study by Rhoten and Parker (2004). There are indications that this has not changed since Rhoten and Parker's (2004) study: according to Schuitema and Sintov's (2017) study focusing on interdisciplinary energy research, researchers in the early or middle career stage suffer less rewards and most costs if they do interdisciplinary research. According to Schuitema and Sintov (2017), this is related to the short-term based evaluation of the researchers and the usage of standards that support disciplinary research. When researchers face barriers early in the career, it affects how willing and able they are to do interdisciplinary research in the future (Van Rijnsoever & Hessels 2011; Siedlok & Hibbert 2014).

Connected to the pressure to do disciplinary research instead of interdisciplinary research discussed above, another motivational factor, that is identified in the literature, is time constraints: researchers do not have time for interdisciplinary research as disciplinary research is often prioritized (Schuitema & Sintov 2017; Siedlok & Hibbert 2014). Also, Schuitema and Sintov (2017) state that lack of necessary knowledge and skills influences the success of interdisciplinary research collaboration, which can be also seen as a barrier to engaging in an interdisciplinary research collaboration.

Next, the existing literature on the ways in which universities can foster interdisciplinary research collaboration is discussed.

## 2.3 University fostering research collaboration across disciplines

The need for interdisciplinary research, with its potential to solve complex problems, has been increasingly acknowledged and it has become an objective for universities. Furthermore, universities have been expected to make profound changes to remove barriers that prevent researchers from collaborating across disciplinary and organisational borders

(National Academies 2005). Research policy recommendations to foster interdisciplinary research collaboration are a central element in literature on interdisciplinary research. However, in this thesis, the focus is on what higher education institutions can do to initiate and foster interdisciplinary research collaboration. Next, the literature on higher education institution's possible actions to foster interdisciplinary research collaboration is discussed.

## 2.3.1 Actions to foster research collaboration across disciplines

Higher education institution's actions to foster research collaboration across disciplinary and organisational borders include three main areas 1) making structural changes in the organisation, 2) creating a supporting environment for collaboration at the campus, and 3) supporting the creation of networks, relationship development and communication among researchers. In addition, specific initiatives for fostering collaboration are discussed.

*Making structural changes*

The importance of making structural changes in higher education institutions, and thus reducing structural barriers to research across disciplinary borders, is emphasized in the context of fostering interdisciplinary research in the literature (see for instance National Academies 2005). Current structures are suited to disciplinary research and need to be changed in order to foster interdisciplinary research; interdisciplinary research should be encouraged and rewarded instead of researchers paying high career costs (Schuitema & Sintov 2017).

National Academies (2005) state that new organisational modes and reward structures are needed to support interdisciplinary research. In addition to allocating resources to interdisciplinary activities in interdisciplinary units and in discipline driven departments, universities should "explore alternative administrative structures and business models that facilitate IDR across traditional organisational structures". According to Sá (2008), universities mostly promote interdisciplinary research by establishing organised research units, i.e. interdisciplinary centres and institutions, which consist of faculty from different departments.

The structures and policies concerning recruitment, evaluation, promotion and training of faculty are central in the proposed structural changes in the literature. These structures and policies together with policies concerning resource allocation hinder the possibilities for interdisciplinary research in many institutions (National Academies 2005), and they are

related to the barriers concerning career, time-constraints as well as a lack of knowledge and skills (see section 2.2.4).

National Academies (2005) suggests that recruitment practices, concerning students as well as faculty, should include recruitment across the borders of departments and schools. In addition, recruitment and tenure decision should consider the values inherent in interdisciplinary research. In their study focusing on supporting interdisciplinary energy research, Schuitema and Sintov (2017) recommend that specific criteria for evaluation and promotion should be developed for interdisciplinary researchers and that the criteria should align interdisciplinary activities with the expectations from the university and departments. This is because even though the number of appointments and research programmes between departments is increasing (National Academies 2005), the position often mean double duties for researchers and departments might not recognise all interdisciplinary activities valuable (Frost et al. 2004; Schuitema & Sintov 2017).

Training can be used to lower the barrier arising from a lack of necessary knowledge and skills. National Academies (2005) recommends that universities should provide mechanisms such as undergraduate research opportunities and interdisciplinary research management training. Schuitema and Sintov (2017) emphasize that training should be provided at the early stage of researcher's career and recommend universities to develop interdisciplinary training programmes. Training is also a way of overcoming the barrier arising from problems of understanding. Schuitema and Sintov (2017) state that while interdisciplinary research training should allow researchers to develop their own expertise, it should also emphasize mutual understanding of methodologies, goals, outcomes and the underlying assumptions of research traditions.

*Creating supporting environment for collaboration*

Campus culture, management support as well as the mission and values of the university affect the environment for doing interdisciplinary research in a university. These areas are mentioned but not highlighted in the recommendations for facilitating interdisciplinary research. Further research is called for, for instance, campus culture influences a supporting environment for interdisciplinary research collaboration, but the relationship of campus cultures to interdisciplinary research is an unexplored area (Sá 2008).

Kezar's (2005) unique study examines the emergence, growth, implementation and success of collaborative context in higher education, and argues that some contextual elements are

shared by those higher education institutions that are successful in collaborative activities. According to Kezar, the key to creating a suitable context for collaboration is based on building commitment. Building commitment includes creating a story to convince the diverse people working in universities of the benefits of collaboration. Some of these people respond best to external pressure, some are compelled by the values of collaboration and some need evidence.

Commitment is supported by senior executive support, mission and networks, and the sense of priority, which comes from the senior executive support, is a key aspect (Kezar 2005). However, Rhoten (2004) argue that there is enough external support for researchers, and the problem is a lack of systematically implementing measures to facilitate interdisciplinary work.

According to Kezar (2005), commitment is a base for collaboration and, after commitment is created, collaboration can be sustained by following key elements; integrating structures, rewards and formalizing networks. Campus networks and relationship development are in key roles in creating context for collaboration. Next, these are discussed in more detail.

*Supporting networks, relationship development and communication among researchers*

Kezar (2005) argues that collaboration cannot be mandated from above, and Melin's (2000) emphasis on how researchers themselves should choose how and with whom they would like to collaborate supports this argument. However, the differences in disciplinary traditions cause barriers to interdisciplinary collaboration, such as problems of understanding (see section 2.2.4). Communication, relationship development and networks are thus in a key role in initiating collaboration.

According to Kezar (2005), a type of networks that is especially relevant in the higher education institution context is campus networks. According to Kezar (2005), campus networks is a unique and critical element for higher education institutions in creating suitable context for collaboration. Campus networks are especially relevant in creating a story that supports collaboration in a higher education institution. As Kezar (2005, p. 847) states: "what made the story created through the values and external messages work is that they were fed into an existing network that both transferred the ideas around the campus, but provided additional validity since peers were supporting the notion being distributed through the network." According to Kezar (2005), campus networks are also a source of leadership, because of dedicated individuals that are active in the networks, and they

maintain and generate more collaboration. Networks play a key role in overcoming barriers and resistance for collaboration.

Together with networks, relationship development plays a critical role for collaboration within the higher education context (Kezar 2005). Kezar's (2005) article suggests that because relationships and networks are critical in initiating collaboration in the higher education context, there should be mechanisms for people to interact. These could be, for instance, communal dining areas or events where researchers could meet each other. Melin (2000) also calls for arenas for relationship development and networking, especially young researchers need to establish contacts and acquire visibility.

Problems of understanding between disciplines is one of the elements that complicates communication between researchers (Siedlok & Hibbert 2014). Frost et al. (2004) suggest that strategies to support collaboration across disciplines should involve helping researchers communicate across departments and schools.

*Collaboration initiatives*

One way of helping researchers to communicate, develop relationships and network is using specific initiatives for this purpose. Siedlok et al. (2015) examine the role of several initiatives in the emergence of collaborative research communities in the university context. These initiatives include events, such as university research day, speed networking, new joiners meeting as well as themed seminars and workshops, which support interdisciplinary interaction in various ways.

In the study of Siedlok et al. (2015), the initiatives supported the formation of the practices of interdisciplinary research (for practices: see section 2.1.3). It does matter in which order and what kind of a mix of events are organised – an appropriate mix and sequence is important, as there are supportive relationships between initiatives. When researchers are still at the enquiry stage, where engaging in any collaboration is still uncertain, there should be several events that offer opportunities for individuals to develop the practices of enquiry, such as exploring opportunities and searching for connections, and these opportunities should have low risks. This helps creating commitment for larger and longer events. Initiatives can also have multiple functions. For instance, the university research day is used in the stage of enquiry, but it is also appropriate for promoting the idea of interdisciplinary research (Siedlok et al. 2015).

So, specific initiatives are one form of actions that universities can take to initiate and foster interdisciplinary research collaboration by supporting networking, relationship development and communication among researchers. Next, my framework for initiating research collaboration across disciplinary and organisational borders is introduced.

## 2.3.2 Framework for initiating research collaboration across disciplines

Based on Siedlok at al.'s (2015) stage model for practices of interdisciplinary research collaboration and literature on drivers and barriers to research collaboration across disciplines, I developed a framework, which 1) combines these aspects of the initiation of research collaboration, 2) emphasizes the researcher's decision as a central element in the initiation of research collaboration and 3) situates university's efforts to initiate research collaboration across disciplines in the process. Next, this framework visualized in figure 3 is discussed in more detail.

I argue that individual researcher's decision to engage in research collaboration across disciplines is central for the university's efforts to initiate collaboration. Kezar (2005) compares fostering collaboration in higher education institutions to corporate context and states that, unlike in corporate context, collaboration cannot be mandated from the hierarchy, but instead, people need to be convinced and commitment created in order to achieve collaboration in higher education institutions. The importance of researcher's own decision is supported also by others. For instance, Melin (2000) emphasizes that researchers themselves should be the ones deciding how and with whom they collaborate. In addition, Siedlok et al.'s (2015) model used in this framework puts researchers in the centre as actors.

*New framework for initiating collaboration*

**Drivers    Barriers**

Institutional factors

Complexity &    Disciplinary
specialization    communities

Personal motivations

Enquiry stage

*University's efforts to initiate collaboration*

University

Researchers

Researcher's decision to engage
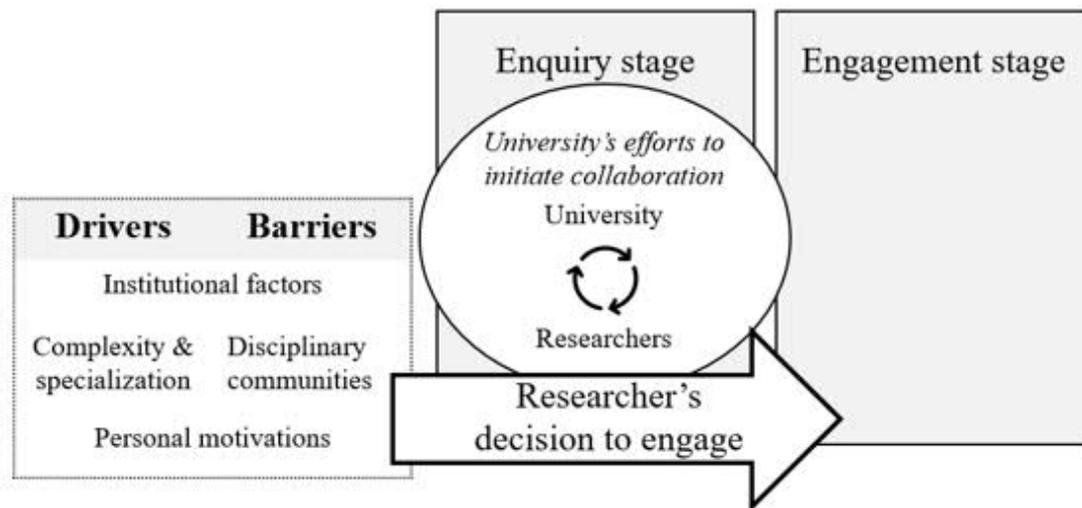
Engagement stage

*Siedlok at al. (2015): stage model for practices of interdisciplinary research collaboration*

| Practices of enquiry | Practices of engagement | Practices of enactment |
|---|---|---|
| Risk taking | Engaging | Maintaining procedural justice |
| Exploring | Investigating fit | Nurturing |
| Seeking opportunities | Building fit | Involving others |
| Unpacking the problem | Accommodating | Brokering connections |
| | Providing focus | |
| | Project tasking | |

*Figure 2. Framework for initiating research collaboration across disciplinary borders in a university, in comparison with the Siedlok et al.'s (2015) stage model for practices of interdisciplinary research collaboration*

The drivers and barriers to research collaboration across disciplines guide researcher's decision to engage in research collaboration and form a 'base' for researcher's decision. Certain factors (see table 2), such as intellectual curiosity, drive researchers to interdisciplinary research and collaboration. On the other hand, barriers to interdisciplinary research have an opposite influence on the decision as researchers might for instance pay high career-costs because of choosing interdisciplinary research path instead of doing only disciplinary research. In addition to drivers and barriers to interdisciplinary research, which are a researched area in existing literature, the drivers and barriers to engaging in any kind

of research collaboration should be considered as factors influencing the researcher's decision. Drivers and barriers are discussed in the section 2.2.

If the drivers and barriers guide a researcher to take a step towards engaging in collaboration instead of stepping away from it, the researcher will take part in a process of finding suitable collaborators and a forming or taking part in a research project. In Siedlok et al.'s (2015) model, this means entering the enquiry stage. Some research collaborations begin without special university efforts and originate for instance from long-time friendships (Mellin 2000). However, other times researchers need to find suitable research partners and projects, and universities organise initiatives to support this.

At the enquiry stage, the researcher's decision continues being central. Who will the researcher collaborate with? What kind of project the researcher decides to start or engage in? Will the researcher continue from the enquiry stage to the next stage and eventually engage in a collaboration?

The model by Siedlok et al. (2015) does not consider the role of the university, which aims at initiating collaboration through an initiative, and how the initiation of collaboration is enabled or hindered by the actors taking part in the university's initiative: the researchers and the university representatives organising the initiative. In my framework, I address these aspects and the role of researcher's decision in the initiation of collaboration and ask what takes place at the enquiry stage that affects the researcher's decision to move on to the engagement stage. The research question of this thesis explores this gap in the literature.

# 3 Methodology and data

Applying an ethnographic approach, I examined one specific university's initiative, a Research Day, which aimed at initiating research collaboration across school and department borders in a university. I collected and analysed data to examine how the initiation of interdisciplinary research collaboration is enabled and, on the other hand, hindered in university efforts to initiate collaboration.

## 3.1 Research approach

This research was an empirical investigation into a relatively under-researched theme of research collaboration, and it was conducted using a qualitative, ethnographic approach. Next, the research approach used in this study is described and justified.

The exploratory nature of the research topic guided the decision of methods towards qualitative research and applying an exploratory approach, organisational ethnography. The objective of this research was to explore the initiation phase of research collaboration in a university, and to examine what people do that enables or hinders the initiation of collaboration across disciplinary and organisational borders. In addition, an aim was to develop suggestions for supporting the initiation phase of collaboration in a university setting in specific. To be able to give these suggestions, there was a need to understand well the phenomenon and culture. As ethnographic research is interested in understanding cultures (Eriksson & Kovalainen 2008), applying an ethnographic approach gave suitable tools to achieve these aims.

There is no previous research that would have focused on this side of research collaboration between disciplines, so this research was an empirical investigation into an uncharted area and thus required an approach that would give flexibility and suit exploring and understanding a new area. Qualitative research is suitable for a research aiming at understanding and gaining insights (Ghauri & Gronhaug 2005), and an exploratory approach is appropriate when the research problem is not well understood from the beginning (Eriksson & Kovalainen 2008), which was the case in this research because of the lack of literature on the subject.

*Research question: how do actors taking part in the initiation of research collaboration enable and, on the other hand, hinder the university's objective of initiating collaboration across disciplinary and organisational borders?*

Ethnographic researcher has an interest in understanding cultures and meaning making (Eriksson & Kovalainen 2008) and, as Fetterman (2010, p. 1) states, ethnographic research focuses on "the predictable, daily patterns of human thought and behaviour". The research question of this study is about understanding the behaviour of researchers in their academic environment and how the prerequisites for the initiation of collaboration are socially constructed by researchers and organisers of an initiative. In addition, I was interested in the thought-processes and meaning-making in relation to initiating research collaboration. In ethnographic research, talk is conceptualised as a social practice, and meaning-making, language and rhetoric are considered central elements (Eriksson & Kovalainen 2008), so what people said – or left unsaid – out aloud or in writing produced meaning in connection to the behaviour I aimed at exploring.

A starting point for ethnographic research is the selection of topic of interest, which guides how the research will be conducted (Fetterman 2010). For this research, the starting point was an interest in exploring the initiation of research collaboration across disciplinary and organisational borders, a topic that originated from empirical observation and proved to be a gap in literature about research collaboration. As is typical for ethnography, this study started with a general idea of what could be discovered, and the research question evolved during the research process (LeCompte & Schensul 2010).

Central elements in ethnographic research entail fieldwork, where the researcher is close to the field and observes the culture from the inside (Eriksson & Kovalainen 2008; Fetterman 2010). Most ethnographic researchers favour approaching fieldwork with discovery-based and inductive perspective on research, where the researcher does not have strict predefined models or propositions beforehand to impose on the empirical world under observation, so that there is room for "local interpretations" (Eriksson & Kovalainen 2008). This was also my approach, and I acquired more knowledge on the culture I observed while doing field work and redefined the research problem during the process.

## 3.2 The researcher's role

A central part of ethnographic research is collecting experience directly from the field (Eriksson & Kovalainen 2008). In addition, ethnographic research studies a phenomenon from the emic, insider's perspective (Fetterman 2010). Before and during the research process, I worked in the culture I was observing at Aalto University. I was a student at the Business School and worked in a relocation project of the school. Furthermore, before the relocation project, I had worked in projects at other schools of the university. This gave me understanding of the different perspectives of the university's communities. During the research process, I was a part of the organising team of the initiative, the Research Day, which was where my research focused on. While doing the research and simultaneously working "behind the scenes" of the Research Day, I gathered insider's understanding of the planning and execution of the initiative as well as added to my existing understanding of the culture that I observed.

The better the ethnographer understands the "local's" point of view the better the research (Fetterman 2010). I worked closely in the planning and execution of the collaboration initiative. However, I had an assistant role in which my responsibilities did not include directly influencing how the planning of the event was done and taking actively part in the organising team's discussion. This made possible a role that was both an insider and outsider, which is according to Eriksson and Kovalainen (2008) a role that many ethnographers aim for, because, in this role, the researcher stays socially and intellectually in the margins of the studied group.

The insider's role also posed a challenge, because it required me to be extra cautious about understanding my own biases. Ethnographer always starts the research with biases and notions about the behaviour and thoughts of the people under observation (Fetterman 2010). Biases serve the research in a positive manner if they are controlled and can be used to focus the research and limit efforts. However, if the biases are not under control, they can weaken the quality of the research (Fetterman 2010).

In the beginning of ethnographic research, there is a survey period when the researcher learns the basics of the situation or culture that is studied (Fetterman 2010). I worked at the Business School already before the initiative was organised, and this gave me understanding of the intentions behind the initiative. In addition, my previous work experience from different parts of the university deepened the understanding.

My working role also gave me an opportunity to overcome a typical practical problem in ethnographic research, which is access (Scott-Jones & Watt 2010). In addition, the academic environment and the relocation project where I worked were favourable to overcome typical problems of access to data. The initiative I observed was part of the relocation project, which had already previously been an object of another research.

## 3.3 Case: Collaboration initiative at Aalto University

The field site of this research was Aalto University, more precisely the Business School and the case observed was a collaboration initiative, Research Day, organised by the Business School. Next, I describe the case and reasoning for choosing it for this study in more detail.

The topic for this research originated from a practical problem at Aalto University, where I worked at the Business School. Aalto University was established when the Helsinki School of Economics, Helsinki University of Technology and the University of Art and Design Helsinki merged in 2010, and collaboration across disciplines is a built-in characteristic in the strategy, mission and existence of the university (Aalto 2015). However, collaboration across disciplines still encounters obstacles and, instead of collaborating across disciplines, it is easier for researchers and students to continue working in silos, which are defined by disciplinary and organisational borders, such as departments and schools.

In 2019, the Business School was relocated to the main campus of the university a few months after the School of Arts and Design had done the same. After the relocation, all the schools of Aalto University were in the same location for the first time in the university's history, and this physical closeness offered new opportunities for fostering collaboration across school borders. The Business School seized the opportunity, used the new physical closeness to other schools of the university as well as the visibility and interest that the relocation had entailed, and organised a Research Day at the new facilities of the Business School. The dean of the Business School set in motion the organising of this event with the objectives of "meeting the new neighbours", initiating more collaboration between researchers from different schools and introducing the research of the Business School to researchers from the other schools of the university.

An organising team comprising of researchers from the Business School was formed to plan and organise the Research Day and, as an assistant in that team, I had an opportunity

to observe the organising team's discussions and actions as well as the Research Day event and the feedback that followed. University-wide research days had been previously organised at the Aalto University; however, this was the first research day for all schools organised by the Business School and by these organisers.

The Research Day was a half-day event where all researchers of the Aalto University were invited. The event comprised of research presentations which were given by researchers of the Business School. The main actors involved in the event included the organisers of the event, the presenters and the participants of the event.

The situation described above was the empirical starting point for this research and guided the decision to apply an ethnographic approach and to examine this single initiative, which I had an opportunity to observe from start to finish. This case was an opportunity to collect data from the "insider's" perspective and increase understanding of the researchers' academic culture. During the Research Day, I had an opportunity to examine how the initiation phase of research collaboration takes place during this kind of university's collaboration initiative. In addition, I had an opportunity to observe what happened "behind the scenes": during the planning of the initiative, I could observe what kind of actions and thought processes lead to the Research Day in its final form. Overall, this case and my role gave access to examine the collaboration initiative and the planning behind it in detail.

## 3.4 Data collection

Ethnography is about collecting first-hand experience close to the field and aiming for a thick description of events, so that the ethnographer can tell the story of the local people in their own context (Eriksson & Kovalainen 2008; Fetterman 2010). Thus, the material for this research were collected from various primary sources of data. I used various sources for data collection throughout the whole planning and execution phases of the event in order to achieve a thick description of the planning process and the initiative I examined, and to explore effectively people's actions in the initiation of research collaboration in this university setting. Next, the data collection for this research is discussed in more detail.

I gathered data during the planning and execution of the collaboration initiative, the Research Day. The data collection period was three months and started from the first meeting of the Research Day's organising team, which comprised of researchers from all

departments of the school. The planning phase took most of this time as the Research Day was a half-day event.

The data collection period covered the planning and execution phases of the initiative but left outside the final phase of following up on the results of the initiative (see figure 3). Time is a practical problem that many researchers encounter when doing ethnographic research (Scott-Jones & Watt 2010) and a reason why the last phase was excluded from the research. Ethnographic research which examines for instance business issues is often conducted within a shorter time frame than classic ethnography, but it can still be informed by a theory of cultural interpretation (Eriksson & Kovalainen 2008). The absence of the result phase was acknowledged and considered in the formulation of the research problem, because it left out examining to what extent the initiative led into formation of new research collaborations.

Planning
3 months
March-June 2019

→ Event
half day
June 10th 2019

→ Results

*Figure 3. Data collection phases of the research day initiative*

Fieldwork, which includes participant observation and writing down notes, is characteristic to data collection in ethnographic research (Fetterman 2010). I observed the organisers during the planning phase of the initiative and made notes in the meetings on what was said. There were altogether three meetings, and in those meetings the organisers discussed their ideas for the format, programme and marketing of the event in an informal manner. After each meeting, I went through my notes and wrote them in a coherent format for further analysis and reflection. I also collected additional written material to support the analysis of the planning process. This material included meeting memos, presentation materials and dozens of emails sent by the organisers. In addition, I collected data on the marketing of the event, which included the marketing plan, marketing texts, such as invitations, and visuals. Additional documents collected included the event programme and presenter introductions.

I attended the Research Day, but because of my double role as a researcher and an assistant, I had limited time for making notes during the event. Thus, the presentations of

the event were video recorded by two research assistants. In addition, photos were taken at the event. The video allowed me to continue the observations and taking notes after the event parallel to analysing other research data.

After the Research Day, a feedback survey was sent to the participants of the event. This feedback survey was conducted to know how successful the event was, because it was organised for the first time, but is also offered an opportunity to get insights from the participants of the event for this research. The feedback survey included six questions. The survey included questions concerning participants' satisfaction with the content, format and timing of the event, participant's will to attend the event the following year and an open-ended question where the participants were asked whether they thought the event supported the formation of collaboration among researchers. The total number of respondents was 17 and the respondents represented different schools of the university.

I collected data that allowed me to examine the initiation of collaboration from the perspectives of different actors involved in the Research Day: the organisers, presenters and participants (see table 3). The data were collected during both the planning and execution phases, which made it possible to observe the behaviour of all these actors, as well as to collect additional material to complement the observations. The data came from different sources and in different formats, so I filed the data in an organised manner during the research process.

*Table 3. Research material collected during the Research Day initiative*

|  | Organisers' perspective | Presenters' perspective | Participants' perspective |
|---|---|---|---|
| **Planning phase** | Meeting observations, notes, memos, emails and presentation materials<br><br>Marketing plan, marketing texts, such as invitations, and visuals | Instruction emails from organisers to presenters |  |
| **Event phase** | Event programme and presenter details | Event observations, notes supporting video & photos | Event observations, notes supporting video & photos<br><br>Feedback survey results |

Often in the beginning of ethnographic research, the researcher does not know what will be discovered during the research process (Scott-Jones & Watt 2010). When I started to collect research material, I did not know what I was going to find, so I aimed at collecting material from various sources and was prepared to collect more if that was necessary to find answers to the research problem, which also evolved during the process. I was for instance prepared to make additional interviews to complement the data gathered during the planning and execution phases of the initiative. However, as is typical for ethnographic research, I analysed data during the data collection phase (Fetterman 2010) and came into the conclusion that the interviews would have not influenced the findings of the research and thus were not required.

## 3.5 Data analysis

The starting point for analysing the research material was inductive, and the descriptive analysis process resulted in 9 themes that emerged from the data. Next, the data analysis and data display are discussed in more detail.

My approach to analysing the qualitative data collected was inductive: the starting point for the analysis was data instead of theory (Ghauri & Gronhaug 2005). This reflects how the research problem started with an empirical interest with little theory of the topic. According to Eriksson and Kovalainen (2008), discovery-based and inductive research processes are favoured in ethnographic research, because if the researcher is set on predefined theoretical models and concepts, the researcher may fail to consider the specific context of the community under study. In this kind of inductive research, theoretical ideas are outcomes instead of starting points for the research (Eriksson & Kovalainen 2008).

The research material was in various forms, which included field notes, emails, presentations, written documents, video, photos and visuals. Instead of focusing on analysing individual pieces of data separately, I approached the data holistically to build a coherent picture of the events. Hence, I formulated themes drawing from data across all sources during the analyses process.

I started the analysis by going through all the research material systematically multiple times. An ethnographic analysis encases examining word choices, tone and non-verbal communication as well as frequency, consistency, intensity, extensiveness and the context (Eriksson & Kovalainen 2008). I analysed material in different forms, so the analyses

included organising materials, going through meeting notes, analysing marketing texts and other written documents, organising feedback survey replies into categories, watching videos and visuals, writing notes on the observations and rewriting notes. I organised, interpreted, searched for patterns and organised the materials eventually into themes.

During the analysis process, I reduced the material by including only material that provided potentially useful insights in the further analysis and excluding material that did not provide meaningful content from the perspective of the research question. The materials that were left out at this stage included most of the emails, presentation materials and photos of the event. The material included I reduced by focusing and simplifying through rewriting.

The observations from the three meetings of the organisers proved to be insightful in providing the organising team's perspective to the initiative. Other material, such as emails, were mainly supporting material. In addition, the marketing materials, such as invitations written by organisers, reflected the organisers' perspective. The observations of the event, including video material, proved to give most insights on the presenters and was key material in analysing the participants' perspective. Furthermore, feedback survey results gave important insights from the participant perspective.

During the analysis process, I considered alternative explanations to my finding as well as the amount and quality of the data I analysed. I was prepared to collect more data if necessary. However, the data collected proved to be sufficient to answer the research question and I came into the conclusion that more data collection would not have changed the results.

I identified nine themes during the analysis. Each theme appeared consistently across different data sources and was drawn from the empirical data. The themes represented different aspects of the planning and execution of the event that affected how the initiation of collaboration was enabled or hindered during the process. Thus, I formulated the themes into the form of enabling factors which are discussed in the findings. The primary data sources of each enabling factor are presented in the table 4.

Table 4. The data sources of the enabling factors

| | Organiser perspective | Presenter perspective | Participant perspective |
|---|---|---|---|
| **The story of collaboration** | Meeting observations & notes, emails, invitation texts, Research Day video | Research Day video & observation | Research Day video & observation |
| **Time for interaction** | Meeting observations & notes | Research Day video & observation, instruction emails from organisers | Research Day video & observation, feedback survey |
| **Visibility of researchers** | | Research Day video & observation | |
| **Interaction between researchers** | Meeting observations & notes, emails, invitation texts, Research Day video & observation | Research Day video & observation | |
| **Indicating the will to collaborate** | Meeting observations & notes | | |
| **Knowledge sharing and understanding** | Meeting observations & notes, emails | Research Day video & observation, instruction emails from organisers | |
| **Opening opportunities for collaboration** | Meeting observations & notes, presenter details | Research Day video & observation | |
| **Building credibility** | Meeting observations & notes, emails | | |
| **Common interests across disciplines** | Meeting observations & notes, invitation texts and a marketing visual | | |

Ethnographic research is often written in a narrative form (Eriksson & Kovalainen 2008). To describe the local context and the perspective of the people involved in the initiation of collaboration, I present my findings, the nine enabling factors, in a form of stories. I used a great deal of direct quotations in these stories to give voice to the people, as is typical for ethnographic research (Fetterman 2010). I also situated myself outside the text, in an observer role and wrote the text in realistic writing. In realistic writing, the researcher is not part of the analysis of the text, but instead, the researcher writes objectively and realistically in passive mode about the events in the field (Van Maanen 1988).

To give more context to the stories, I also wrote a short background text which describes the overall situation where the stories take place and sheds light to the rationale behind the collaboration initiative. In this background text, I used the knowledge that I had due to my study and work experience at the university. In addition, the stories are followed by my findings on the roles of actors and the relationships of the enabling factors that take place across the stories.

This analysis provides results on an exploration into unknown and the aim is to shed light to a topic that has not been researched. This kind of analyses has potential to describe and explore a phenomenon in a specific context and from the perspective of the "local" people.

## 3.6 Ethical considerations

The ethical issues concerning this study mainly related to the access to the ethnographic material and included following the principles of informed consent and anonymity.

My role as a researcher was a participant-observer role. In participant-observer role, there is a closer relationship between the researcher and the researched than when the researcher is only an observer (Eriksson & Kovalainen 2008). Because of this role I paid special attention to the anonymity and confidentiality issues. Even if my working role as an assistant gave me access to various sources of information, this research refers only to data that does not cause confidentiality issues.

Informed consent is a standard ethical principle that is accepted as an ideal stance by social scientists (Scott-Jones & Watt 2010). I explained what the research was about and was prepared to clarify the purpose of the research whenever asked. For instance, the researchers recorded on video were asked for permission, and anonymity of the recordings was guaranteed for the participants

During the data collection process, I followed ethical principles of confidentiality, informed consent, anonymity, respecting others and honesty. However, ethical considerations of a research process are not limited to the data collection but also issues such as plagiarism (Eriksson & Kovalainen). During the writing process, I also paid attention for instance to avoiding plagiarism as well as to citing and quoting properly.

# 4 Findings

The findings of this study are presented in the form of stories, which is an appropriate format for an ethnographic research. These stories describe events that took place during the planning and execution of a Research Day from the perspectives of the organisers and participants of the event.

The findings are divided into two sections. The first section includes the stories as well as background for the stories. In the second section, the analysis is taken a step further and the roles of actors and the relationships of the enabling factors are discussed drawing from the findings of the stories.

## 4.1 Stories from a university's collaboration initiative

The Research Day organised by the Business School of Aalto University was the initiative in the centre of this study. In order to provide the reader of this document a fuller picture of the events that took place during the organising and execution of that initiative as well as the starting point of this study, this section starts with an overall description of the Research Day and the perspective of this thesis. This background section is followed by eight stories that describe enabling factors for initiating research collaboration that were identified in this research.

### 4.1.1 Background: Research Day as a way of initiating collaboration

After the Business School had relocated to the main campus of the university where it was situated in the same location with other five schools of the university, the dean of the school used the new situation and set in motion an idea of organising a Research Day where the research conducted in the Business School could be introduced to other schools. The idea behind the event was that it would be an opportunity to "meet the new neighbours" and initiate research collaboration among schools while organising one of the first events in the brand-new facilities.

A main organiser was appointed from the faculty to be responsible of the event planning and execution, and this main organiser formed an organising team with representatives from every department of the school. The task of the team was to create a concept and plan the programme for the Research Day.

The team comprised of the main organiser, an informal inner circle of organisers and the rest of the organising team, who were all researchers. In addition, the team included me in two roles: as an assistant in the event planning and an ethnographer. The main organiser coordinated all event planning and organising. The organising team met altogether three times to discuss the concept and the programme. In addition, discussion was continued by email between the meetings. In the email discussion, the main role was played by the inner circle of organisers which included the main organiser and two other members of the team who worked in key positions.

The main tasks of the organising team were to plan what kind of programme would be included and who would present in the event. A member of the organising team from each department put together a list of researchers and research topics as possible content for the event, and the organising team selected presenters from those lists. The organising team decided that because it was possible to give spots only to a limited number of researchers, there was also a poster session included in the event. The call for posters was sent to all researchers in the Business School, and all who were willing and had the time to bring a poster could sign up.

All the researchers of the university were invited to the event by personal email invitations. The aim was to achieve a full house of researchers from different schools of the university, so the planning team – especially the main organiser – put an effort into the marketing of the event.

After a three-month period of concept and programme planning, marketing and event organising, the Research Day took place. Eventually, the Research Day took a form of a half-day event. At 1.30 pm on a Monday, the event started with a coffee and registration, which was followed by a 15-minute welcome from the dean and the associate dean in the lobby of the new Business School building. For the next two hours, the programme was divided into two parallel tracks in different rooms: short research presentations in the lobby and theme sessions in an auditorium. Participants were given the freedom and encouraged to move freely between the parallel tracks. After the parallel sessions, the participants came together for a 45-minute panel discussion with a topic: "How can the School of Business create value in the Aalto community?". The event ended with a combination of a poster session and an informal networking dinner, where participants discussed and ate standing while watching posters.

After the event, a feedback survey was sent to the participants of the event. The main purpose of this survey was to receive feedback of the concept and success of the event.

The main objective of the event was to initiate research collaboration across disciplinary and organisational borders. These included the borders of the six schools of the university as well as the borders of the departments within these schools, for instance, the six departments of the Business School. The organising team acted as the university's agent in planning the ways of achieving this objective through the Research Day event. However, achieving the objective did not only depend on the organisers, and the circumstances for initiating collaboration was created also by the presenters and participants of the event. Figure 4 visualizes these roles using my new framework (for framework, see section 2.3.2).

The participants and presenters, who had a double role as participants in the event, were researchers who had the role of potential collaborators during the event. According to the findings of this research, presenters and participants together with the organisers, created 'enabling factors' for initiating collaboration across disciplinary and organisational borders. These enabling factors were drivers that enabled the initiation of collaboration.
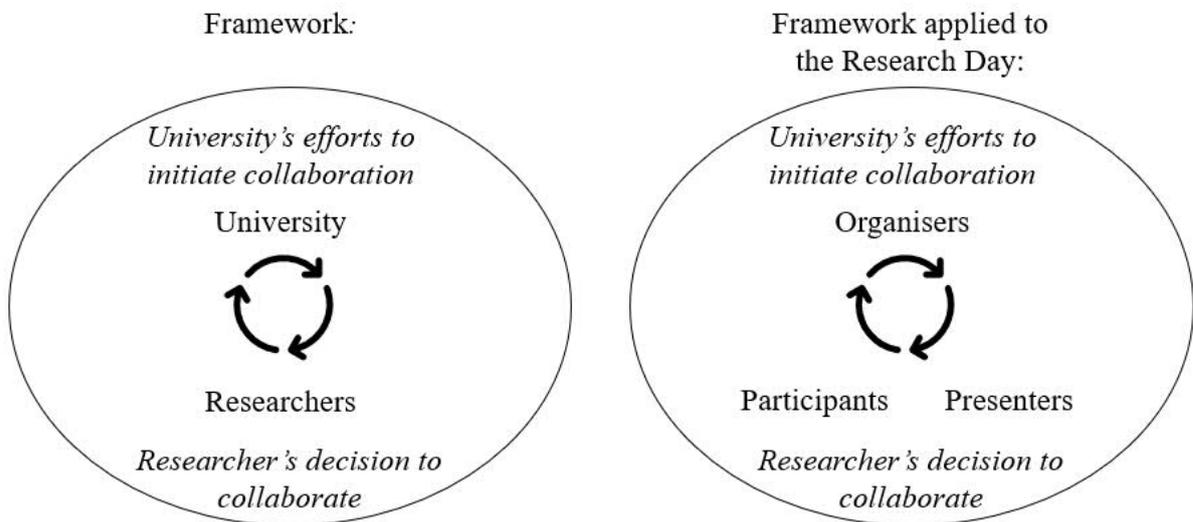


*Figure 4. Actors enabling the initiation of collaboration at the Research Day*

Based on a thematic analysis on the data about the planning and execution phases of the Research Day, I identified nine enabling factors for initiating collaboration across

disciplinary and organisational borders. The thematic analysis process is described in the section 3.5.

These enabling factors are described through stories. The stories describe how the enabling factors emerged in the planning and execution of the Research Day, and present the findings of the analysis in a narrative form, which draws a coherent picture from the various data sources used in the analysis and presents my interpretation as an ethnographer and an insider in the planning process of the Research Day.

There are nine enabling factors and eight stories (see table 5). With one exception, each story describes the findings related to one enabling factor. Two enabling factors, building credibility and opening opportunities for collaboration, are described through one story, because describing these two enabling factors this way allows to bring forth their relevant competing roles during the planning of the Research Day.

The stories, and the enabling factors, are in a random order. This is because they do not form a process, and the causalities and the significance of each factor are not in the scope of this research. The relations of these factors are further discussed in the section 4.2.2.

*Table 5. Enabling factors for initiating research collaboration across disciplines*

| **Enabling factors** | **Story** |
| --- | --- |
| The story of collaboration | Story 1: Constructing the story of collaboration |
| Time for interaction | Story 2: Having the time |
| Visibility of researchers | Story 3: Being visible to others |
| Interaction between researchers | Story 4: Interacting towards collaboration |
| Indicating a will to collaborate | Story 5: Indicating a will to collaborate |
| Knowledge sharing and understanding | Story 6: Sharing knowledge and creating understanding |
| Building credibility | Story 7: Building credibility or opening opportunities for collaboration? |
| Opening opportunities for collaboration | |
| Common interests across disciplines | Story 8: Creating bridges with common interests |

## 4.1.2 Story 1: Constructing the story of collaboration

The objective of the Research Day was to initiate research collaboration, and it was also an opportunity to promote the idea of research collaboration across disciplines. However, the way this was communicated, and the story of collaboration constructed among the organisers, presenters and participants of the event varied greatly during the planning phase and the event.

*Early in the first meeting of the organising team, one of the organising team members was trying to make sense of the target group of the event. He asked the other team members whether the event would include students as a target group, or the event was about increasing collaboration. The conclusion following this question was that researchers were indeed the target group – meaning that the event would be about creating collaboration.*

*A little bit later in that meeting, the main organiser explained the objective of the event to be about "introducing the research of the school" and did not mention anything about collaboration.*

The organisers started the construction of the story of collaboration during the planning phase through the way they told the story among themselves and to potential presenters and participants of the event. Collaboration was the objective of the event from the start, but the way the story of collaboration was told and reinforced during the organising team meetings was subtle. As in the example above, sometimes the role of collaboration seemed to be taken for granted, it was not clearly communicated and did not even receive the status of the event's objective.

However, collaboration emerged from time to time in the organising team's discussions. In these cases, the members of the organising team reminded each other about the significance of collaboration, and in doing so, reinforced the story of collaboration in the event planning. One of these instances was during the third meeting of the organising team when there was a discussion about the panel topic.

*After a member of the planning team suggested a Business School centred topic for the panel discussion, other members pointed out that this kind of topic would be looking too much inward, and that instead, collaboration was interesting. The following discussion included phrases such as "roots and ideas for collaboration" and "how we come out of*

*silos". Eventually, the topic was decided to be about how the Business School can contribute to the whole community of the university.*

Organisers had the opportunity to promote the idea of collaboration to the presenters and other potential participants of the Research Day before the event. However, the collaboration aspect of the event did not have a role in recruiting presenters.

*In the first meeting of the organising team, representatives of the Business School's departments were given a task to find potential presenters for the Research Day from their departments. At this point, nothing was mentioned about the collaborative nature of the upcoming event and the department representatives all decided their own way of contacting potential presenters in their department. When the final list of presenters was decided, organisers sent presenters instructions, but again, collaboration was not mentioned.*

The organisers communicated the idea of collaboration through marketing to the potential participants of the event, but again, it was not given the centre stage.

*"This is also an opportunity to find new collaborators to interdisciplinary projects" was the way in which collaboration was mentioned in the invitation of the event. Collaboration was not highlighted but instead told as the last thing in the short invitation text.*

The objective of increasing research collaboration may not have had strong presence in the communication by the organisers, but it was emphasized and supported by the leaders of the school. The leaders had set in motion the event planning and had also a role in constructing the story of collaboration at the event.

*The Research Day started with a welcome speech by the dean of the Business School and, in this speech, the dean highlighted the opportunities in collaborating across disciplines: "But where we really still have scope for further development, is in terms of working together across disciplines. Both in order to be able to address better the big societal challenges that we have and will be facing in the future, but also because working together across disciplines is a great opportunity to add things to the existing disciplines themselves. So, at least for us, this is a great opportunity, and that is why we have invited you all to come here today."*

*After this speech, the associate dean of the school continued and, again, highlighted the vision of cross-disciplinary research and the hope that the event would foster collaboration.*

How the story was constructed in the event after this depended on the facilitators, presenters and participants of the Research Day. After the welcome by the deans, the event continued with two parallel sessions in two different rooms, which divided both the audience and presenters as well as the way in which the story of collaboration was further constructed (see figure 5).

*In the same room where the welcome speeches took place, the programme continued with short research presentations. Most presenters did not particularly address collaboration, but there were, for instance, presenters from multidisciplinary projects who did this by inviting participants to join or to collaborate. Furthermore, one of the presenters stated in the middle of the presentation that: "The idea is that, basically, like [the associate dean] said earlier, we all know that for the future, particularly when it comes to something like work, we need to be much more multidiscipline, multimethod in order to understand the complexity, and now we are working towards that."*

The audience also took part in constructing the story of collaboration by commenting and asking questions.

*For instance, one participant underlined that "the theme today is about collaboration" and asked the presenters what kind of perspectives or skillsets the research project was missing. This question not only lead to an answer about possible interesting skillsets and perspectives but also spurred a story about how one of the presenters had started a collaboration in the past.*

The facilitator of the session had an important role in bringing up the idea of collaboration when it did not happen in a presentation.

*For instance, the facilitator asked the presenters questions about what kind of connections the researchers saw to the research done in other disciplines as well as a question about a presenter's experience in doing multidisciplinary research. The latter question spurred the presenter reflecting on the success factors of doing multidisciplinary research and what it meant for himself: multidisciplinary research urged him out of his comfort zone and enabled new kind of learning.*

In the first room, the story of collaboration had been socially constructed and reinforced as a person's comment or question had led to other people considering and talking about the same topic. In the second room, the opposite happened.

*Parallel to short research presentations in the first room, theme sessions took place in the second room. Setting was very similar to the first room in a sense that the programme in the second room also consisted of short research presentations. However, in the second room, the idea of collaboration was barely mentioned by any of the facilitators, presenters or members of the audience*

## TWO PARALLEL SESSIONS

### Room 1
Short research presentations

Facilitator intentionally created discussion by asking collaboration-related questions.

Some presenters highlighted collaboration in their presentations and Q&A section.

Some members of the audience touched upon collaboration in questions.

### Room 2
Theme sessions

Facilitators, presenters or audience members barely mentioned collaboration.

*Figure 5. Collaboration aspect was acknowledged differently in two parallel sessions*

The Research Day was not only a means of creating opportunities and connections on spot but also a way of promoting the idea of collaboration. The story of collaboration was socially constructed during the discussions of the organising team, in the marketing of the event as well as in the speeches, questions, answers and comments during the event. This story highlighted the opportunities of collaboration, for instance in addressing societal challenges and adding to existing disciplines as well as in supporting personal learning of a researcher. However, the construction of the story of collaboration required contribution from different actors, and this contribution was not self-evident even when collaboration was the original objective of the event.

This story described the enabling factor: constructing the story of collaboration.

## 4.1.3 Story 2: Having the time

Nothing happens if there is no time. Doing interdisciplinary research collaboration requires time and so does initiating collaboration. There needs to be time for researchers to interact, explore opportunities and make contacts. Time was an important theme emerging from the Research Day data and, for the organisers of the Research Day, time was a concern from the start.

*The first meeting of the organising team started with a discussion about the timing of the event. The date of the event was during a time when researchers, including some of the organising team, were busy with other seminars and assignments. After this, there was a discussion about how long the event should be and during what time of the day. Lunch was suggested as a time when researchers might be interested in attending, because they could have lunch and save time this way.*

The organisers also acknowledged from the start that both organising and participating an event require time and many events compete for researchers' limited time.

*During the meetings of the organising team, one of the main topics discussed was attracting participants to the event, and team members stated their concerns about the challenges in this more than once. The event needed to be attractive enough to compete with other things interesting or requiring researchers' time. It also needed to be short enough, so that researchers would have time to attend. This was why the organisers decided from the start that Research Day would be a half-day event instead of lasting for the whole day.*

In addition to the timing and length of the event, another time issue was the quantity and length of the presentation slots that the organisers allocated to the presenters of the event as well as the time reserved for discussions and networking.

*"There should be many short presentations – let's try to bring forth as many people as possible", stated one of the organising team members in a meeting. Having limited time and an aim to bring forth as many researchers as possible led to many short research presentations in the programme.*

*At the Research Day, many presentations ended with a rush as the facilitators of the event were strict with the time allocated for presentations as well as for questions and answers. In the end of the event, there was time for networking. This networking with dinner and posters was when the participants had more time to discuss, make connections and explore opportunities.*

Organisers decided how time was divided between presentations and other section of the programme, and the presenters and participants had no choice but to act in the event within these time frames.

*At least some of the participants would have wanted more time for presentations and questions and answers, as was mentioned several times through the feedback survey of the event: "The presentations were way too rushed, fewer topics with less rush would be better. There was no time for questions except for a few single topics [--]", "Longer presentations, more time to talk with the audience."*

For the researchers organising and participating the event, it was much about balancing with time and other engagements.

*As one of the participants described his or her situation in the feedback: "Awesome to hear what my colleagues are working on. Lunch networking would have been much better for me – as a parent I need to balance between family and research priorities."*

Plan the timing, length
and time allocation

Organisers

Participants and Presenters

Have limited
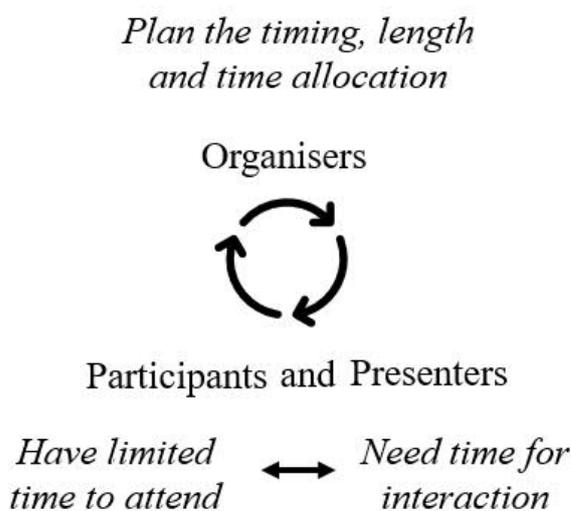time to attend ⟷ Need time for
interaction

*Figure 6. Planning a collaboration event means balancing with time*

Balancing with time was a visible element in the initiative from the perspectives of all of actors (see figure 6). The participants wished for more time for presentations, but on the other hand, if the event would have been longer, would they have had the time to attend? Time was needed not only to organise this collaboration initiative but also to interact, explore, seek opportunities and make contacts.

This story described the enabling factor: time for interaction.

## 4.1.4 Story 3: Being visible to others

Researchers are the ones deciding with whom they want to collaborate, so initiating collaboration across disciplinary and organisational borders requires that researchers appear from their silos and are visible to potential collaborators from other disciplines. At the Research Day, the researchers came to the event and were visible to other researchers as presenters and participants.

The organisers influenced on who could participate the event in the role of a presenter. The number of presenters and the type of visibility that was offered to the presenters depended on the format and length of the event. Organisers also identified potential presenters and decided who would present.

> *In the first meeting of the organising team, the main organiser asked department representatives to collect lists of possible presenters from their departments. These department representatives were left to decide themselves how they found potential presenters, so the department representatives decided if they asked everyone or only some researchers from their departments and in what manner they did this. When the lists were made, the organising team made the final decision on who would present.*

The organising team's discussions also played a part in influencing who would get visibility in the event. These discussions touched upon several issues that influenced the planning behind the final list of presenters for the event. These issues included attracting audience, representing the school's research well, treating the departments equally and a hope for gender balance.

> *During the meetings of the organising team, the idea that "big names" and "interesting speakers" would attract audience, was mentioned several times. These big names were*

*planned for the start of the programme to bring participants and for the end of the programme as a highlight.*

*In the first meeting, the organisers discussed the aims of the Research Day. The aim discussed was introducing the research of the school. The organisers discussed including a wide variety of research topics and introducing what kind of research was done at the Business School.*

*A need to bring forth as many researchers from the Business School as possible was clear in the discussion. For instance, instead of a "greatest hits" session, one of the members suggested that there should be short presentations and an attempt to introduce as many researchers as possible within the time limit. Because the time limit only gave room for a certain number of research presentations, posters were considered as a way of increasing the number of research projects presented. All the researchers of the Business School were able to sign up as poster presenters if they were interested in doing so and had the time.*

*The organising team members also raised the concern that the research presented should be of good quality, because it represented the Business School to "outsiders", i.e. researchers from other schools of the university.*

Organisers discussed several issues concerning possible presenters, as examples above illustrate. However, a topic that was not mentioned during the discussions was who would be interested in collaborating across disciplines in the future.

Many issues influenced how the visibility that came with presenting at the event was divided between the researchers of the Business School. The Research Day offered visibility especially for the research and researchers of the Business School, and researchers from other schools had the possibility to be visible only by participating and actively networking at the event.

Participating Research Day offered researchers different types of visibility depending on their role and activity during the event (see table 6).

*Table 6. Visibility of researchers during the Research Day*

| Role | Type of visibility |
|------|--------------------|
| Participants | - Being present at the event<br>- Asking questions, commenting and networking |
| Presenters | - Introducing their research in front of other researchers<br>- Including invitation to collaborate or other relevant information/aspects for the audience in the presentation |

Presenters had the advantage of being seen by the whole audience of researchers and being given time and stage to introduce their research. However, some of the presenters used this visibility more for collaborative purposes than others.

*For instance, presenters from a multidisciplinary project not only introduced their research to the audience, but also invited everyone interested in collaborating to contact them after the presentation.*

Participant role was possible for all researchers of the university who were able to fit the event into their schedule. Participants could improve their visibility by actively asking questions, commenting and networking during the event. It was also possible to only passively participate and contact presenters after the event. In the latter case, the possible collaboration would have been dependent on the visibility of the presenters at the event.

Visibility as a participant gave the researchers less "coverage" than the role of a presenter but it had still the possibility to be effective in initiating collaboration.

*A participant commented via the feedback survey that he or she had found a collaborator during the poster and networking session. These two participants had found each other possibly without the wider visibility that a presenter's role would have given them. Instead, an important step had been to come to the event and actively interact with others.*

The format of the event, which was decided by the organisers, influenced the number of researchers gaining visibility and the quality of that visibility. This format of the Research Day offered visibility in the form of being given the spotlight in front of an audience of researchers or attending and networking as a participant.

This story described the enabling factor: visibility of researchers.

## 4.1.5 Story 4: Interacting towards collaboration

Collaboration is an interactive process, and so is the initiation phase of collaboration. The organisers of the Research Day planned a format for the event which catered to a certain amount of interaction. In this setting, the presenters and other participants of the event interacted, and the initiation of collaboration was enabled through this interaction.

*The wish and aim for interaction in the programme emerged at several points during the planning team discussions. For instance, when discussing the format of the event, members of the planning team suggested: "genuinely something that creates dialogue" and "in addition to introducing us, we should find possibilities to do something together".*

There was a wish for interactive programme among organising team members. However, interaction was given only limited amount of attention in the final formation of the event's programme.

*The organising team discussed several suggestions for the programme of the event. These included different kinds of research presentations, including theme rooms and "greatest hits" or "future hits" sessions, as well as posters. The suggestions included also networking over lunch or dinner and a panel discussion.*

*Research presentations, in the form of short research presentations resembling pitches and theme sessions, were given most time in the final programme. Theme sessions gained support as an idea, because it had potential for collaboration and creating interesting discussions about the selected themes. "Greatest hits" sessions had potential "political issues", as one of the organising team members commented, and it was never included in the programme. Posters were included in combination of dinner, which offered time for discussions and networking after other sessions.*

The suggestions of the organising team included sessions that would have offered a different kind of interactive platform. However, these ideas were never included in the programme.

*The organising team discussed different suggestions for a possible matchmaking session, but eventually, matchmaking was not included in the programme. This*

*exclusion was not a result of a specific discussion during the meetings, but rather, a matchmaking session did not fit in to the programme with the time limits and resources of the event.*

The organising team planned the format that gave certain amount of possibilities for interaction during the Research Day. However, the facilitators of the event and the leaders of the Business School played an important part in encouraging the participants of the event to interact during the event.

*The vice dean of the Business School emphasized the importance of interaction in his welcome speech in the beginning of the event: "We would very much like you to come talk with us during the breaks and after the presentations and see if there are some opportunities to work in our areas. [--] Feel free to walk between the sessions, just as you like, and feel free to ask questions all the time. This should be an interactive day, and let's discuss these topics." Later, interaction was encouraged by the facilitators of the event.*

Eventually, there were two main occasions when interaction took place in the form of discussion between researchers at the event. These were research presentations with questions and answers as well as informal discussions during the combined poster session and networking lunch after the event. A panel discussion, which was also a part of the programme, gave little opportunities for the audience to interact outside questions and answers. Instead, the audience followed the interaction of the panellists. See table 7 for all possibilities for interaction during the event.

*Table 7. Interaction during the Research Day*

| Programme section | Opportunities for interaction |
|---|---|
| Research presentations | Presentations with Q&A |
| Combined poster session and lunch | Informal discussions and networking |
| Panel discussion | Panel discussion and Q&A with the audience |
| Matchmaking (not included in the final programme) | Informal discussions in pairs or groups in a structured setting |

Informal discussions were an important way of interaction during the event. These discussions were also potential starting grounds for collaboration.

*Even though this was not specifically asked in the feedback survey, one respondent shared via the survey that he or she had found a new collaborator from another school during the poster session. In addition, during a question and answer section after her presentation, one of the speakers reflected on her experience in finding new collaborators: "I think, last time we had an event we got talking with these brain researchers [--], and now we are thinking of a collaboration project with them --- so that's one way, so it doesn't always have to be something that we are looking for – this just emerged in a conversation: they said they were doing something that could fit with what we are doing."*

Interaction was not only a wish of some of the organising team members, the leaders and facilitators of the event, but it also seemed to be the participants' wish. The fact that it was highlighted by all these actors, emphasizes its importance in an event such as the Research Day.

*After the event, a wish for an interactive format came through in the attendees' feedback. Even though, in the responses, it was emphasized that it is "important to know what is happening in other schools" and "it gives very good insight on the current research topics and it keeps me updated regarding research works in other domains" (i.e. researchers want to know what is going on), the importance of interaction was strongly highlighted in the answers – both positive and negative. This came through as appreciation of possibilities for discussions, networking and making contacts as well as a wish for more time for those aspects in the programme.*

Despite the wish for and the importance of interaction, the format of the event gave limited opportunities for interaction, mainly in the form of presentations with questions and answers as well as informal discussions in the end of the event. The importance of interaction in initiating collaboration was highlighted in the examples that were told by participants about how interdisciplinary research collaboration had started in an event, that is during informal discussions.

This story described the enabling factor: interaction between researchers.

## 4.1.6 Story 5: Indicating a will to collaborate

Many researchers from all departments of the Business School attended the Research Day as speakers or poster presenters, and participants of the event came from all schools of the university. Even though alternative motivations to attend are possible, being at this event that aimed at creating collaboration indicated the speakers' and participants' will to share knowledge, learn across disciplines and collaborate.

*"The project has not yet started. It is starting December this year, so what I'm doing here is that I introduce it to you and if you see any relation to your research or are interested in collaborating with this research, I am happy to hear your ideas, and also you can contact [--]", said one of the presenters from a multidisciplinary research projects inviting participants to collaborate. This presentation was one of the few indicating this direct invitation to collaborate during the event.*

A will to collaborate was clearly indicated in some of the research presentations during the event. For instance, there were presentations of multidisciplinary research projects where the invitation to collaborate or join the project was clearly stated. However, most presenters did not directly indicate a will to collaborate with the participants and focused on offering the audience a possibility to learn and gain insights of what kind of research they had been conducting. This kind of presenting research may have not offered an invitation or possibility to join the research project that was presented but, instead, it offered fuel for discussions, networking and exploring collaboration possibilities with other participants after the presentation.

Even though already attending the event as a speaker or participant may have indicated a will to collaborate across disciplines, this was questionable for some of the speakers.

*Only a few speakers answered a facilitator's question "do you see any connection with your research to what people in other schools or in other disciplines would benefit?" with an answer indicating that they did not see any connection to disciplines of that university.*

This does not deny possible future collaborations with researchers from other disciplines, but it also does not invite to explore possibilities for collaboration and might hinder the possibilities for initiating collaboration with researchers from other disciplines. Presenting

relevant content for the audience, on the other hand, might be a stronger indication of a will to collaborate in the future.

At least some of the participants did have a will to collaborate, which came across in the feedback after the event.

> *The responses to the event's feedback survey included comments such as "good opportunity to form new contacts" and "I found a new collaborator". There were also suggestions to improve the circumstances for creating collaborations, for instance, a participant's suggestion was: "what about announcing/advertising future possible open research positions within the presented projects?".*

Attending an event aiming at initiating collaboration could be considered as an indication of a will to collaborate. Of course, researchers might have other reasons to attend, such as intellectual curiosity. Participants had possibilities to further indicate their will to collaborate to other participants of the event during informal discussions.

Indicating the will to collaborate is a step towards initiating collaboration. During the Research Day, the presenters and participants of the event had an opportunity to do this in different ways (see table 8). If the will to collaborate is not indicated, like in the presentations that bluntly offered no connection to other disciplines, possibilities for starting to collaborate with researchers seeking for collaboration opportunities might be hindered.

*Table 8. Ways of indicating a will to collaborate during the Research Day*

| Role | Indicating a will to collaborate |
|------|----------------------------------|
| Participants | - Being present at the event<br>- Indicating a will to collaborate during discussions |
| Presenters | - Presenting relevant content for the audience<br>- Direct invitation during a presentation |

This story described the enabling factor: indicating a will to collaborate.

## 4.1.7 Story 6: Sharing knowledge and creating understanding

The organising team of the Research Day created an arena where the presenters, participants and facilitators of the event participated in knowledge sharing and creating understanding. During this process, some problems of understanding in interdisciplinary research collaboration were also pointed out.

> *"We wish to share knowledge to our colleagues in other schools of the university on the research that we do.", "Join the event to get to know your colleagues, and to gain insight on some topical economic and societal issues"*

Knowledge sharing was on the organisers' agenda when planning the Research Day, which emerged in the discussions and was clearly written in the invitations send to the potential participants from the Business School and from other schools of the university, as the paragraph above demonstrates. But knowledge sharing requires also understanding – an issue that emerged already in the first meetings of the organising team.

> *How will the audience understand? pondered the organisers when they were discussing possible content for the Research Day programme in the planning meetings. One of the members commented that research should be "unwrapped in a way that others can understand" and "create points of synergy". When discussing the panel that was planned for the programme, another organiser stated that the content "needs to be understandable for the audience". Third organiser was concerned of the same issue when discussing research presentations: "Too much pitching is shallow. On the other hand, the audience does not necessarily understand if [the speakers] go too deep into the subject".*

The organising team created an arena where presenters and participants shared knowledge and created understanding. The organisers influenced knowledge sharing for instance through the format and time that was allocated for each section of the programme. They were also able to give instructions to the presenters and facilitators of the event.

> *Eventually at the Research Day, the research presentations had strict time limits both for the presentation and for the questions and answers. Presenters gave their presentations within strict time limits and many of them used the slide template recommended by the organisers, which gave visual coherence to presentations. The possibility for longer discussions was in the end of the event, when there was time for a*

*poster session and networking over dinner. The organisers had recommended the presenters to take advantage of the poster session as a way of further communicating their research to the participants.*

Presenters shared knowledge and created understanding together with the participants and facilitators (see table 9).

*Most of the research presentations during the Research Day aimed at sharing knowledge by explaining their research including their motivations and the terms they used. Question and answer section after a presentation was the time for the audience to get clarification to the issues that were mentioned in the presentations and interact with the presenters. After the presentations, there was also time for informal discussions.*

*Table 9. The roles in sharing knowledge and creating understanding*

|  | Sharing knowledge | Creating understanding |
|---|---|---|
| **Organisers** | - promoted knowledge-sharing<br>- planned a format<br>- instructed presenters and facilitators | - planned a format<br>- instructed presenters and facilitators |
| **Facilitators** |  | - commented<br>- asked questions |
| **Presenters** | - presented research<br>- answered questions and interacted with participants | - presented research<br>- explained terms etc. connected to their presentations<br>- answered questions and interacted with participants |
| **Participants** | - commented presentations<br>- discussed with each other | - asked questions<br>- commented presentations<br>- discussed with each other |

The facilitators also played a role in the creation of understanding. For instance, facilitators highlighted problems in understanding across disciplines through comments and questions.

*In the theme sessions, there were four presentation related to one theme and after that a possibility for the facilitator of the session and the audience to ask questions. After one of the theme sessions, the facilitator of that session pointed out how the researchers from different research areas had talked about similar things using different terms in*

*their presentations: "Could we use more common language? I am seeing there is coordination mechanism happening here: there is markets, someone calls it ecosystem, some calls it industry. What would be your view from researcher perspective to make more accumulated knowledge? How could we find ways to talk more commonly and understand more commonly these coordinating activities?"*

*After the last theme session, a question from the audience was also concerned with the usage of terms differently across disciplines: a researcher from the audience questioned how one of the presenters used a term which would be used in a completely different manner in natural sciences, which seemed to be the background of the one who asked the question. Commenting on this, the facilitator ended the theme session pointing out that the previous question and answer "illustrates the difficulties we have in multidisciplinary research".*

The importance of knowledge sharing was not only promoted by the organisers, but it was also acknowledged by the participants.

*After the event, the participants did not reveal any issues in understanding through the feedback survey. Instead, they highlighted the importance of knowledge sharing and learning: "[attending the Research Day] gives very good insight on the current research topics and it keeps me updated regarding research works in other domains", "I learned a lot", "Knowledge sharing is so important".*

Problems of understanding is an acknowledged barrier to interdisciplinary research (Siedlok & Hibbert 2014) and understanding has a role not only during the process of doing interdisciplinary research but also when initiating research collaboration across disciplines. This was also acknowledged by the organisers of the Research Day. The organisers of the event put together the programme and promoted knowledge sharing, and with input from the facilitators, the participants and presenters shared knowledge and created understanding during the event.

This story described the enabling factor: knowledge sharing and understanding.

## 4.1.8 Story 7: Building credibility or opening opportunities for collaboration?

The organisers had a possibility to influence what kind of opportunities for collaboration the Research Day opened for its participants. The different types of opportunities that

emerged from the data included 1) opening opportunities on spot by presenting early-stage projects, 2) laying a foundation for future projects by presenting what kind of research and researchers there were and 3) giving ideas for future research collaboration. During the planning phase, opening opportunities on spot by presenting early-stage ideas competed with another prerequisite for collaboration, building credibility.

*In the first meeting of the organising team, the team members made sense of the task ahead and brainstormed ideas for the programme. When the discussion turned to research topics and presenters, the issue of credibility versus opening opportunities for collaboration emerged in the form of deciding whether to present high-quality research and build reputation or to showcase early-stage research projects that would need more resources and open opportunities for collaboration on spot:*

*Member A suggested that a wide variety of research topics should be included in the event and continued: "We should shed light to what kind of research is being done. How much should we present research that has just ended and how much those that are about to start? [--] This would enable collaboration."*

*Member B: "For the audience coming outside the Business School, [the research presented] needs to be of quality. If the ideas are too early, then they are not always so high quality."*

*Member C suggested combining both types of research.*

*The discussion continued with the main organizer stating that "resources are wanted for early ideas" and a bit later stating again, that "we need to create reputation [as member B said]".*

Even though building credibility seemed to be competing with the idea of presenting early stage projects during the planning team discussions, building credibility can be seen as a separate prerequisite for initiating collaboration. The credibility of a researcher might make that researcher a more appealing partner for research collaboration. The organisers discussed here also building the credibility of the organisation behind the researcher, which might be a factor increasing the credibility of individual researchers representing that organisation.

*At a later stage of the Research Day planning, when the members of the organising team collected suggestions for research topics and presenters, both types of*

*presentations – early-stage projects that open opportunities for collaboration and later-stage "quality" presentations that build credibility – were included in the suggestions and there was no further discussion about the presenters from this point of view.*

*Eventually, the programme of the Research Day included mainly presentations of on-going or already finished research projects. Out of 22 research presentations, there were only two multidisciplinary research projects that offered direct invitation to join or to collaborate.*

Presenting early-stage projects can open opportunities for collaboration on spot, and presenting existing or finalised research projects might offer collaboration opportunities in the long run:

*One of the participants reflected in the feedback survey: "There were mainly showcases of existing/finalised projects, not really opening any door for collaboration on the spot. Still, knowing what expertise exists at BIZ is potentially useful for collaborating in the long term."*

There were also other ways of opening opportunities for collaboration during the Research Day, and those opportunities came in different forms through research presentations and in the discussions after the presentations.

*For instance, a presentation showcasing a finalised research project, which had used Finnish datasets, did not settle with presenting the research but also offered a collaborative angle in the end of the presentation: "So, why did I give this kind of presentation to you: those unique datasets in Finland offer us great opportunities for multidisciplinary research. [--] We can get more out of those databases using multidisciplinary research and I think we haven't used them enough yet."*

Presenting early-stage research projects that invite researchers to collaborate or offering other opportunities for collaboration, such as the example above, open opportunities for researchers exploring to join or start a collaboration. Presenting on-going or finalised research might not offer this kind of invitation to collaborate on spot, but they can build the credibility of the researchers and give "fuel" for informal discussions and networking during the event. As one of the participants said, knowing what kind of expertise exists, might be useful for collaborating in the long term.

This story described the enabling factors: opening opportunities for collaboration and building credibility.

## 4.1.9 Story 8: Creating bridges with common interests

*"Interesting topics"*, *"I learned a lot"*, *"very good insight on the current research"*

Researchers' intellectual curiosity and the appreciation of "interesting" topics came through in the answers to the feedback survey of the Research Day. For the organisers, topics and themes that were interesting across disciplines were a way of structuring programme, attracting audience and creating opportunities for collaboration.

The use of themes was the organising team's way of structuring programme and bringing forward possible common interests across disciplines.

> *The use of themes in the programme took the form of theme sessions which included three themes with four research presentation under each theme. The themes had names such as: "What are the business implications of big data and AI?", which the organisers formulated to be interesting from the participants' perspective.*

> *Theme sessions was an idea which received support and was decided to be included to the programme already in the first meeting of the organising team. The first idea for theme rooms was to have researchers from different departments to give short presentations under one specific theme in one room. When this was discussed, one of the members spontaneously exclaimed that "there is already a research project in one room!", which highlighted the collaborative possibility of this idea.*

Themes and topics that the organisers considered would be interesting across disciplines were also used as a way of attracting audience to attend the Research Day.

> *In an organising team's meeting, one of the team members commented: "topics that are as catchy as possible attract participants".*

> *In addition to adding theme sessions and interesting topics to the programme, the themes and topics were used as key words in the marketing of the event, which brought along the input of the school's graphic designer. The key visual used in all marketing of the event, including invitations, was an image where the event name was surrounded by words from the themes of the programme (see image 1). The word and visual choices made in this image reflect the school's graphic designer's view of what are the most*

*interesting themes for an audience representing different disciplines, in other words, what are the themes that represent common interests and create bridges across disciplines.*

At the Research Day, the presenters talked about their research connected to these topics and this created discussion around the topics as participants commented and asked questions about the presentations.
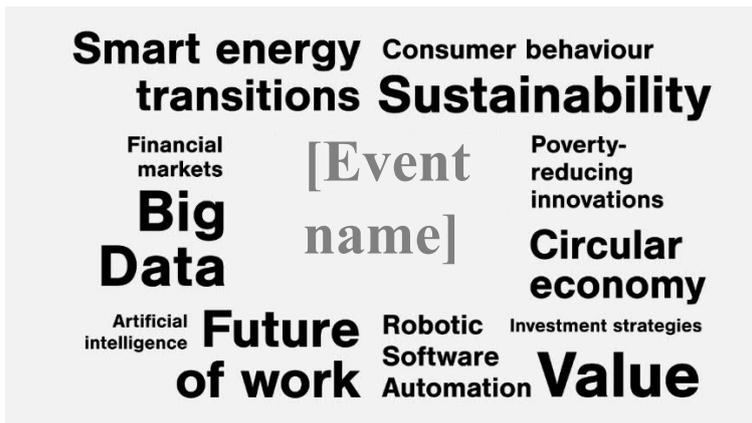


*Image 1. The main visual used in the marketing of the Research Day.*

The importance of finding common interests across disciplines was also highlighted in the participants' answers to the event's feedback survey:

*One respondent described how the event supported the formation of collaboration: "It gave an opportunity to have discussions outside your own specific field and find common factors across the research fields."*

*Another respondent commented that it would be useful to organise this kind of event in other schools as well: "Would help in understanding the research in other schools besides your own. Makes easier to find mutual interests across disciplines."*

*Two respondents of the feedback survey even suggested that, in the future, the event could be more interdisciplinary and organised around the university's platforms which include thematic areas such as digitalisation and sustainability. This way, the attendees of the event would have a common interest and a link to other participants already in the thematic area of the event.*

The common interests of researchers from different backgrounds create bridges across disciplines. Common interests were the organising team's way of structuring programme and attracting participants to the event. For the participants of the event, common interest

created collaboration opportunities and discussion among participants representing different disciplines.

This story described the enabling factor: common interests across disciplines.

## 4.2 Further analysis across stories

The stories above described events behind enabling factors for initiating research collaboration that were identified from the data. Next, the findings from analysis across stories is presented. This includes considering the roles of actors in the creation of the enabling factors and the relations of the enabling factors.

### 4.2.1 The roles of actors

To find answers to the research question of this thesis, it is central to consider the roles that different actors played during the Research Day and in enabling the initiation of research collaboration across disciplinary and organisational borders. Table 10 is a summary of the roles of organisers, presenters and participants in the creation of enabling factors for initiating collaboration for each enabling factor that was identified in this study, and it provides a representation of the potential that emerged for each role. For instance, the presenters were in a position to open collaboration opportunities, even though many of them did not do this.

The task of the organisers was to plan and organise the format and programme for the Research Day. This included recruiting and instructing presenters. The organisers were also responsible for marketing and communication aspects of the event. So, the organisers constructed an arena and influenced conditions in which the presenters and other participants of the event operated and constructed the enabling factors for initiating collaboration. For instance, the format the organisers created influenced on what kind of possibilities the participants of the event had for interaction and what type of collaboration opportunities were given visibility during the event. Often, the circumstances that the organisers created for the enabling factors were not done intentionally. Sometimes an intention was there but the results were not in line with the intention. For instance, the organisers discussed creating programme that encourages interaction, but some of the possibly more interactive content was later excluded from the final programme.

During the Research Day, the presenters and participants of the event interacted and contributed to the creation of the enabling factors in the arena that the organising team had planned. Presenters had a special role in the creation of enabling factors. From the perspective of initiating collaboration, the presenters had an advantage as their role gave them more visibility than to normal participants. However, presenters had also responsibility in enabling collaboration; compared to participants, presenters had a stronger position for sharing knowledge, creating understanding, indicating a will to collaborate, opening opportunities for collaboration, building credibility and telling the story of collaboration. Participants had an opportunity to do all this as well, however, their opportunities were limited to commenting and asking questions from presenters and informal discussions. Other times, they were more on a "recipient" side: noting the presenters' credibility and a will to collaborate and learning about the collaboration opportunities.

In addition to the organisers, presenters and participants, also the leaders of the school and the facilitators of the event influenced the creation of the enabling factors. The leaders of the school initiated the Research Day planning and participated to some extent in the creation of some of the enabling factors. For instance, the leaders spoke in the event and took part in creating and supporting the story of collaboration. However, I argue that once there is a decision that an event, such as the Research Day, will be organised with certain resources, time frame and objectives, the role of the leaders decreases, and the organisers of the event become the representatives of the leaders. In this study, I examine the planning and execution of an event and do not focus on factors affecting outside the event. Therefore, the leaders are not included in the table 10. Facilitators also played a catalyst role in constructing some of the enabling factors during the Research Day. For instance, they encouraged interaction and facilitated knowledge sharing and understanding. However, they are not included in the table 10, because I consider the facilitators being in a secondary role that supported the actions of the presenters and participants.

Overall, the organisers, participants and presenters had important roles in enabling the initiation of research collaboration in the initiative. The organisers of the Research Day created the arena were participants of the event, including presenters, continued the creation of enabling factors for initiating collaboration. These roles are illustrated in the figure 7.

*Table 10. The roles of actors*

| | Organisers | Presenters | Participants |
|---|---|---|---|
| **The story of collaboration** | Participate in the creation of the story of collaboration | Participate in the creation of the story of collaboration and are the target group of the story | Participate in the creation of the story of collaboration and are the target group of the story |
| **Time for interaction** | Plan a format and allocate time | Need time to attend the event and interact | Need time to attend the event and interact |
| **Visibility of researchers** | Influence the amount and type of visibility of researchers | Are given the most visibility, but also influence their own visibility | Are given certain amount of visibility by attending the event, but also influence their own visibility |
| **Interaction between researchers** | Plan a format that cater to a certain amount and type of interaction | Interact with other participants | Interact with other participants |
| **Indicating the will to collaborate** | Organise a stage for indicating a will to collaborate | Indicate a will to collaborate through presentations | Indicate a possible will to collaborate by being there and note others will to collaborate |
| **Knowledge sharing and understanding** | Plan a format which gives an arena for knowledge-sharing and understanding | Share knowledge and create understanding | Recipients and may also participate in creating understanding and sharing knowledge |
| **Opening opportunities for collaboration** | Plan a format which supports to certain extent and certain types of collaboration opportunities | Open collaboration opportunities for participants | Note collaboration opportunities and open opportunities to other participants |
| **Building credibility** | Plan a format and how much the event aims at building credibility | Build credibility in front of other participants | Note credibility of others and may build their own credibility |
| **Common interests across disciplines** | Emphasize common interest in the format | Present research connected to common interests and create discussion around these interest | Use common interest as a way of discussing with others |

*created an arena and
conditions for the construction
of enabling factors*

Organisers

Participants and Presenters

*constructed enabling factors
together in interaction*

*Figure 7. The construction of enabling factors for the initiation of collaboration*

However, differences between the enabling factors were identified and, for instance, time for interaction, interaction between disciplines, and common interest across disciplines differ from other enabling factors. Next, the relations of and the differences between the enabling factors are discussed.

## 4.2.2 The relations of enabling factors

In the centre of initiating collaboration, there is interaction between researchers. Interaction was a recurring theme that emerged in the data, as is described in the section 4.1.4. In addition, all the other enabling factors identified in this study are connected to interaction. Next, the relations of enabling factors and the special role of interaction are discussed in more detail.

I argue that interaction is not only an enabling factor but also a crucial prerequisite for initiating collaboration, and other enabling factors that I identified are connected to interaction. Time is an essential factor for interaction to take place. Common interests act as a bridge between the researchers coming from different disciplinary and organisational backgrounds, and common interests create ground for interaction and possible future

collaboration. The rest of the enabling factors that I identified are socially constructed through interaction (see figure 8).
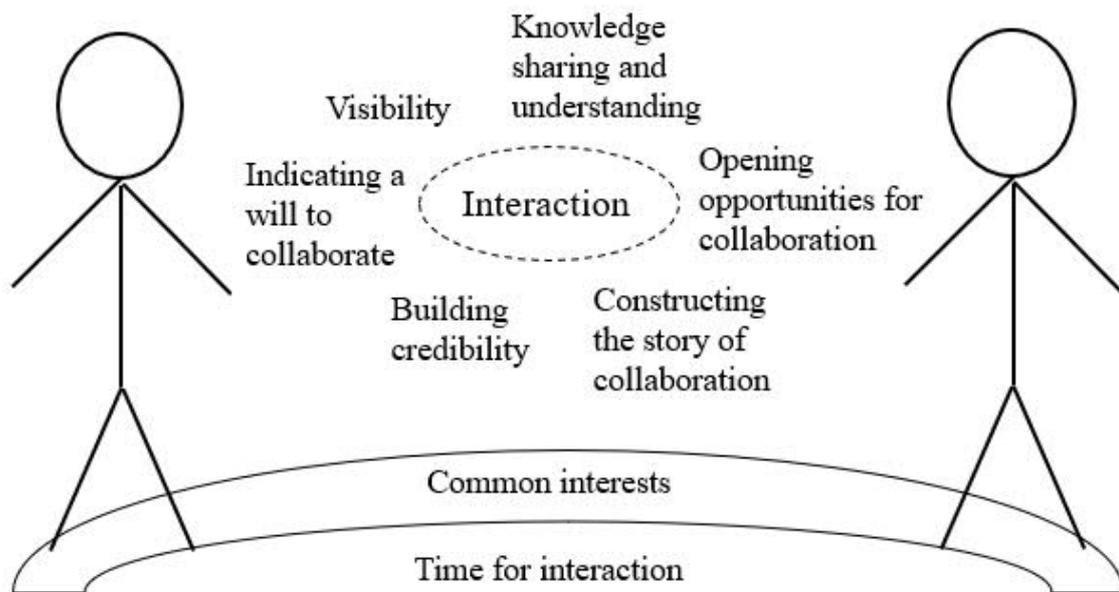


*Figure 8. Enabling factors are connected to interaction between researchers*

The figure 8 illustrates interaction that takes place between researchers, i.e. participants/presenters, during a collaboration initiative and where enabling factors are constructed. These researchers interact in an arena that has been created by the organisers of the initiative.

The figure 8 differentiates the positions of the enabling factors that were identified in this study. Most of the enabling factors are centred around interaction, because they are created in the interaction between researchers. Time is an enabling factor that does not take place in interaction but that makes interaction possible. Time could be also called a 'prerequisite', because it is essential to have time for interaction to take place. Also, common interests between researchers, who come from different disciplinary backgrounds, is not created in interaction but it is closely related and, as previously noted, act as a bridge

and enable interaction as well as initiation of collaboration between researchers. Even though other factors are connected to interaction, I also identified interaction as one of the enabling factors. This is because interaction between researchers has importance on its own, and the other factors that were identified are not everything that interaction has to offer in the initiation of collaboration.

The enabling factors identified in this study may overlap, for instance, opening opportunities require knowledge sharing and understanding, and these factors are in many ways linked.

Next, the findings of this study are further discussed in connection to existing literature and the new framework developed in this thesis.

# 5 Discussion

Using an ethnographic approach, this thesis explored the following question: how do actors taking part in the initiation of research collaboration enable and, on the other hand, hinder the university's efforts to initiate collaboration across disciplinary and organisational borders? In the data analysis, enabling factors for initiating collaboration and the roles played by actors in the construction of these factors were identified. Next, the findings are discussed in connection to existing literature. First, the findings are discussed from the perspective of the new framework developed in this thesis. This is followed by recommendations for universities.

## 5.1 Revisiting framework

This study explores an under-researched area, the initiation of research collaboration across disciplinary borders, and the findings of this study are in line and add to the new framework that is introduced in the section 2.3.2 (see figure 9). This framework draws from existing literature on drivers and barriers to interdisciplinary research collaboration, Siedlok et al.'s (2015) model for the emergence of interdisciplinary collaborative communities and literature on university actions to foster research collaboration. In the framework, these aspects of existing literature are combined, and the initiation of research collaboration is examined as a process in a unique way.
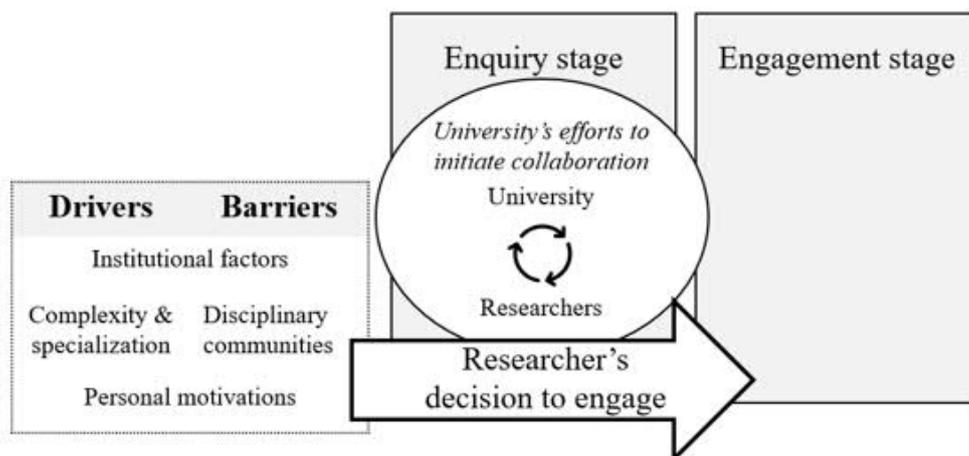


*Figure 9. Framework for initiating research collaboration across organisational and disciplinary borders*

In the centre of this process, there are university's efforts to initiate collaboration, and the investigation into the Research Day initiative added new knowledge to the process from the perspective of a specific collaboration initiative organised by a university. The findings of this study offer a new way of looking at the initiation of collaboration: enabling factors for initiating research collaboration across disciplines are constructed in interaction between the event's participants in an arena that is created by the university's organising team. Next, the findings of this study are further discussed from the perspectives of the framework's components: the researcher's decision, the drivers and barriers to research collaboration, the university's actions to initiate research collaboration and the stage model by Siedlok et al. (2015).

## 5.1.1 The role of enabling factors in the researcher's decision

In the framework (section 2.3.2), the individual researcher's decision to engage in collaboration is situated as a central dynamic element in the process of initiating research collaboration across disciplines. The importance of researcher's decision is acknowledged in existing literature (for instance, Kezar 2005 and Mellin 2000), but the central and dynamic role that is given to the researcher's decision in this framework is new. I argue that it is the researcher's decision to engage in a collaboration that is a central element that determines whether the initiation of research collaboration advances or not, and the findings of this study are in line with this view.

In the data analysis, I identified enabling factors for initiating collaboration, which have potential to guide researcher's decision towards engaging in collaboration, and they add to the existing knowledge of factors affecting the researcher's decision. For instance, the findings suggest that if researchers have time for interaction and common interests, other factors, such as knowledge sharing, building credibility and opening opportunities for collaboration, enable the initiation of collaboration and influence the researcher's decision to move on to the next stage of engaging in collaboration. On the other hand, the absence or failure of these factors might guide a researcher to deciding not to engage in collaboration.

All enabling factors that were identified in the analysis are connected to interaction between researchers, and I argue that interaction is a central element affecting the researcher's decision to engage in collaboration in the context of a university's collaboration initiative. From the enabling factors that were identified, interaction, time for interaction and common interest across disciplinary borders can be seen as prerequisites for the initiation of collaboration because, without these, the initiation of collaboration would not take place in a context of a university's collaboration initiative, such as the Research Day.

Obviously, the enabling factors identified in this study are not a single element affecting the researcher's decision and this exploratory study identified only a group of enabling factors. The enabling factors identified in this study emerged from the empirical data as key factors affecting the initiation of collaboration in the context of a university's collaboration initiative. I am certain that there are also other factors that were not identified in this research that could supplement this list of factors enabling the initiation of collaboration, but identifying these factors, their relationships and relative importance for the researcher's decision require further research.

The framework also suggests that drivers and barriers to engaging in research collaboration across disciplines are important elements in affecting the researcher's decision. Next, the findings are discussed in relation to these drivers and barriers.

## 5.1.2 Drivers and barriers influencing researcher's decision

According to the framework developed in this thesis, the drivers and barriers to interdisciplinary research collaboration include institutional factors, personal motivations as well as factors arising from disciplinary communities, specialisation and the complexity of problems, and these influence researcher's decision to engage in interdisciplinary research collaboration. Some of these drivers and barriers identified in the existing literature emerged in the data, which supported the view that considering these drivers and barriers is relevant for the initiation of research collaboration. Next, the drivers and barriers that were visible in the findings are discussed.

Time constraints is an acknowledged barrier to doing interdisciplinary research in existing literature (Schuitema & Sintov 2017; Siedlok & Hibbert 2014) and it also seems to be a barrier to initiating research across disciplines. Time was a visible theme in the findings, and this emerged from the perspectives of both the organisers and the participants. Time for interaction was identified as a prerequisite for initiating collaboration. However, also a possible conflict, or at least a challenge, was observed: the participants both had limited time to attend the event but also needed enough time for interaction.

Problems of understanding is another barrier to interdisciplinary research collaboration identified in the existing literature (Siedlok & Hibbert 2014). Problems of understanding was briefly acknowledged by the organisers of the Research Day, but it was the facilitators who had an important role in facilitating understanding between the presenters and participants during the Research Day. Understanding has an important role not only during the process of doing research but also when researchers seek for potential collaborators and collaboration opportunities across disciplines. For instance, differences in terminology was observed as a factor complicating the communication between researchers from different disciplines.

Intellectual curiosity has been identified as one of the drivers of interdisciplinary research (Siedlok & Hibbert 2014), and it was visible also in the findings of this study. Intellectual curiosity is closely related to the enabling factors of knowledge sharing and common interests across disciplines. Intellectual curiosity emerged indirectly in the findings especially as a reason for participants to attend the Research Day, and on the other hand, it was used as a way of attracting participants.

Complexity of problems is a driver (Siedlok & Hibbert 2014), which emerged from the data in connection to the creation of the story of collaboration and was acknowledged as a driver for research collaboration across disciplines more than once during the Research Day. As one of the presenters stated, there is a need to collaborate in order to understand the complex problems.

However, mostly the organisers of the Research Day did not explicitly consider the drivers and barriers to engaging in collaboration across disciplines in the planning of the initiative, and I argue that this was a lost opportunity. Supporting drivers and lowering barriers to

engaging in research collaboration across disciplines, could be an effective way of enabling the initiation of collaboration as these influence the researcher's decision. The drivers and barriers that the organisers of an initiative, such as the Research Day, could consider include intellectual curiosity, problems of understanding, tribal attitudes between disciplinary communities, perceptions for career-development, time constraints, lack of necessary skills and knowledge-based needs. On the other hand, institutional factors that act as drivers or barriers were not visible in the findings of this study, and, even though they could be discussed or in other ways acknowledged during an event such as the Research Day, they cannot be influenced at the initiative level and are perhaps less relevant than other drivers and barriers in the context of a university's collaboration initiative.

## 5.1.3 The roles of actors in university efforts to initiate collaboration

University's objective and efforts to initiate research collaboration across disciplines is in the centre of this study and the framework. In the data analysis, I addressed this area by focusing on examining the actions of different actors in enabling the initiation of collaboration to explore ways to impact this initiation through a university's collaboration initiative. The findings were in line with the university's and researchers' interaction suggested in the framework: during the initiation process, university creates an arena for researchers to initiate collaboration.

Universities have different ways of fostering research collaboration, as discussed in the section 2.3.1. Special collaboration initiatives, such as the Research Day, are one type of possible action, and for instance Siedlok et al. (2015) suggest that an effective way in supporting the formation of research collaboration is a combination of collaboration initiatives. In addition, a university can improve the conditions for the initiation of collaboration for instance by making structural changes, as is suggested in the existing literature (for instance, Schuitema & Sintov 2017). This study contributed to literature on university's actions by examining a type of collaboration initiative in specific and how actors enable the initiation of research collaboration in the initiative context.

The roles actors play in a collaboration initiative is not an element in existing literature that covers universities actions for initiating research collaboration, so the approach of this

study is new. The findings suggest that the organisers of an initiative, who are the university's representatives, are responsible for creating an arena and conditions for the interaction of the participants of the event, including the presenters. In this interaction, participants construct enabling factors for initiating research collaboration. There are also other actors who influence the initiation of collaboration in an initiative. For instance, the university leaders set in motion the planning of the Research Day and the facilitators of the event acted as catalysts in the creation of the story of collaboration at the event and enabled knowledge sharing and understanding.

The construction of the arena and the enabling factors are not necessarily done consciously. In fact, the findings indicate that, even when enabling factors were created, this most often was not done intentionally. However, the organisers of the event could enable the initiation of collaboration by systematically constructing an arena for the interaction of the participants. For instance, creating bridges with common interest could be supported by organising an initiative around topics that are interesting for researchers across disciplines, visibility of researchers could be supported in a way the programme is created and presenters chosen, and an effective story of collaboration can be supported by systematically planning how collaboration as a theme is brought forward in the initiative.

Furthermore, the data analysis indicated that university's objective, actions and results were not perfectly in line. The collaboration objective of the leaders was somewhat lost in practice: collaboration was not highlighted in the discussions of the organisers as an objective and secondary objectives and practicalities were given a more prominent role in the concept planning and execution of the event. Eventually, the format of the event was not developed from the perspective of initiating collaboration between schools but from the perspective of presenting the research of the Business School. Communicating collaboration clearer as an objective and intentionally building the event to support the initiation of collaboration has potential to create a more effective arena for the creation of enabling factors for initiating collaboration.

An individual researcher is in the centre of initiating collaboration, but a university is in a role to develop the suitable conditions and an arena for the initiation of collaboration. From a university's perspective, it is relevant that the new framework and the findings point to

certain elements that university can influence through its actions and thus foster the initiation of collaboration between researchers from different disciplines and the different departments or schools of the university. Actions to foster the initiation process that can be drawn from the findings of this study include 1) supporting the drivers and lowering barriers identified in the existing literature and 2) constructing a supporting arena for the interaction of researchers and the construction of enabling factors.

### 5.1.4 Contribution to the stage model of interdisciplinary practices

The collaboration initiatives of universities dot not have a notable presence in existing literature. However, a study by Siedlok et al. (2015), which focuses on the emergence of collaborative communities, examines different collaborative initiatives of a university. The framework developed in this thesis draws from the stage model by Siedlok et al. (2015) which was a result of an investigation into a set of collaboration initiatives and adds dynamic elements into the model (see figure 2). The findings of this study give new insights into the first stages of the model.

The framework and findings of this study focus on the first stage of the model, the enquiry stage, and how researchers advance to the next stage, the engagement stage. At these stages, Siedlok et al. (2015) examine what researchers do in an initiative whereas I brought in the perspective of the university and how the representatives of the university efforts, i.e. the organisers of the initiative, influenced the initiation of collaboration.

Practices identified by Siedlok et al. (2015), such as risk taking, exploring and seeking opportunities, take place in interaction between researchers. The findings of this study complement the model by Siedlok et al. (2015) by shedding light to what takes place in the interaction and what kind of enabling factors take place during the practices of the enquiry stage. These enabling factors and their connection to the researcher's decision give a dynamic addition to the stage model by Siedlok et al. (2015) by exploring the aspect that take place not only at the enquiry stage of the model but also between the enquiry and engagement stages.

### 5.1.5 Call for clarity on disciplinary integration

Interdisciplinary is a term used frequently in the literature on research across disciplines if compared to other terms of disciplinary integration, such as multidisciplinary and transdisciplinary. In this study, the aim was not to focus on interdisciplinary research, even though existing research focusing on interdisciplinary research was widely used. The findings of this study are not limited to one way of disciplinary integration, such as interdisciplinary research, but they aim to cover all attempts to foster the initiation of collaboration across disciplinary and organisational borders.

For instance, in the context of Aalto University, the term multidisciplinary is often used. This came through in the results of this study and is highlighted in the strategy of the university (Aalto 2015). However, as is acknowledged in the existing literature, the usage of the terms interdisciplinary, multidisciplinary and transdisciplinary is sometimes vague, and this might affect the usage of the term at Aalto University as well.

Multidisciplinary research is the least integrated form of disciplinary integration in comparison to interdisciplinary and transdisciplinary research, and the goals of the types of disciplinary integration differ from each other. I argue that there is a need for future study to see what kind of differences there possibly are in the initiation of collaboration if the aim is interdisciplinary, multidisciplinary or transdisciplinary research in specific.

Next, practical recommendations for universities are discussed.

## 5.2 Recommendations

The starting point for this study was a practical question concerning how universities can foster research collaboration across disciplinary and organisational borders. Existing literature has answered this question with suggestions for instance to make structural changes in universities (see section 2.3.1). The findings of this study add to the existing knowledge from the perspective of collaboration initiatives of universities. Based on the findings and the new framework developed in this thesis, I formulated recommendations

for universities that organise events, such as the Research Day, to initiate collaboration across the silos that are so characteristic to universities.

The findings suggest that the organisers of a collaboration initiative are in a role to construct an arena and conditions to support the creation of enabling factors and the interaction between researchers. I argue that this arena should be constructed with a clear intention to create collaboration and to support the drivers of research collaboration across disciplines as well as the factors that enable collaboration. In addition, the barriers to interdisciplinary research should be acknowledged and lowered wherever possible.

The practical recommendations for the organisers of a collaboration initiative are presented in the table 11. These recommendations are based on the enabling factors for initiating research collaboration that were identified through the data analysis and the observations on the organising team of the Research Day.

The final recommendation considers the role of the drivers and barriers to research collaboration across disciplines. Several drivers and barriers to interdisciplinary research collaboration have been identified in the existing literature, and I argue that supporting the drivers and lowering the barriers – to the extent it is possible in the context of an initiative – would be beneficial for the initiation of research collaboration across disciplines. This is because the drivers and barriers affect the researcher's decision to engage in collaboration, which is a central element in the initiation of collaboration (see figure 2).

The organisers of an initiative could consider supporting the drivers, such as intellectual curiosity and knowledge-based needs, by providing the participants of the initiative with interesting content that potentially match with the participants' needs for future collaborations. The barriers that could be lowered include problems of understanding, tribal attitudes between disciplinary communities, lack of necessary skills and perceptions for career-development. These could be lowered for instance by 1) using facilitators to ease the problems of understanding between participants from different disciplines, 2) supporting the development of necessary skills for collaboration in workshops and 3) discussing concerns, such as perceptions for career-development, openly in a manner that encourages stepping towards engaging in a collaboration between disciplines.

*Table 11. Practical advice for the organisers of a research collaboration initiative*

| Organisers' action | Details |
|---|---|
| *Set collaboration firmly as the objective* | Set clear objectives for an initiative and communicate these to all actors involved in the initiative: the organisers, presenters, participants and facilitators. Be clear how these objectives are achieved. |
| *Plan how the story of collaboration is created* | Support the creation of the story of collaboration by deciding how collaboration as a theme is brought forward during the initiative. |
| *Open opportunities for collaboration* | Consider how and what kind of opportunities for collaboration are opened through the initiative. For instance, are there 1) opening opportunities on spot by presenting early-stage projects, 2) laying a foundation for future projects by presenting what kind of research and researchers there were or 3) giving ideas for future research collaboration. |
| *Support knowledge sharing and understanding* | Support knowledge sharing in a way that researchers from different disciplines understand each other. This could include offering assistance for communicating research, instructing researchers and using facilitators. |
| *Mind the time* | Balance between the researchers having limited time for attending an event and giving the participants of the event enough time for interaction throughout the initiative. |
| *Acknowledge the importance of interaction* | Plan the format of the initiative around interaction between participants. |
| *Create bridges with common interest* | Organise the initiative around interesting topics that attract and create bridges between researchers from different disciplines. |
| *Give visibility to researchers who are interested in collaboration* | Organise the initiative so that it gives a stage for researchers who possibly have an interest in collaboration and give possibilities for also the regular participants to be visible to potential collaborators during the event, and easily contacted after the event. |
| *Support drivers and lower barriers to engaging in research collaboration* | Consider how to support the drivers and lower the barriers to engaging in research across disciplines in the initiative (see table 2 for drivers and barriers). |

The findings suggest that even in a scientific community of a university, considering and applying the knowledge of existing literature in practical aspects, such as organising events, is not self-evident. The time pressures and academic interests focused elsewhere are likely reasons behind this. Therefore, there is need for practical recommendations that are based on scientific knowledge for the people who have been assigned to organise a collaboration initiative.

# 6 Conclusion

In this thesis, the under-researched initiation phase of research collaboration across disciplinary and organisational borders was explored in the context of universities. The aim of this study was to examine how collaboration is enabled or hindered in university efforts to initiate research collaboration, in order to shed light to the ways in which a university can support the initiation phase of collaboration in its initiatives.

Using an ethnographic approach, I examined the planning and execution of a single university's collaboration initiative, Research Day, from the insider's perspective and gathered qualitative data from various sources. In the centre of the data analysis, there were the actions of different actors in the initiative, especially the organisers, presenters and participants of the Research Day. The data analysis resulted in nine enabling factors for initiating collaboration, which were presented in a form of ethnographic stories.

As the complexity of the societal and technical problems has increased the call for interdisciplinary research, research collaboration across disciplines has gained importance as a strategic objective in universities. This study contributed to the understanding of a key phase, the initiation, of this societally significant phenomenon.

Furthermore, the findings of this exploratory research shed light on an uncharted area of research, the initiation phase of research collaboration and contributed to a new framework for the process of the initiation of research collaboration across disciplines. In the centre of this process is a researcher's decision to engage in collaboration. The framework connects the drivers and barriers identified in the existing literature to the process of initiating collaboration in a new way. The findings of this research give insights into factors enabling the initiation of research collaboration across disciplines and the roles of actors in the construction of these factors.

The starting point for this study was a practical need: how to foster research across disciplines in a university? The ethnographic investigation provided an excellent opportunity to find answers to this question and to develop practical solutions for universities to initiate collaboration across the borders of the silos that are characteristic to

universities. The findings of this study shed light on the aspects that a university should consider when initiating collaboration and, based on the findings, practical advice was formulated specifically for organisers of a collaboration initiative, such as the Research Day. These include supporting the drivers and lowering barriers to engaging in research collaboration across disciplines and constructing a supporting arena for the interaction of researchers and the construction of enabling factors for research collaboration.

Even if literature on research collaboration has proliferated in recent years, the process that leads to research collaboration between disciplines has not been thoroughly studied. This exploratory study indicates new avenues for research in the process leading to research collaboration across disciplines. Further research is required, for instance, to better understand the factors enabling research collaboration across disciplines and the causalities in the initiation of collaboration. There is also a need to further investigate how different factors, drivers and barriers influence the researcher's decision to engage in collaboration across disciplines. In addition, the differences in how much different disciplines engage in research collaboration has been acknowledge in existing literature (Lewis et al. 2012; Melin 2000; Van Rijnsoever & Hessels 2011), yet the differences between disciplines in the process leading to research collaboration is a topic for future research.

The findings of this study add to the scarce existing knowledge of the initiation process of research collaboration and give practical tools for universities to foster research collaboration across disciplinary and organisational borders – a topic that has a prominent role on the agenda of many higher education institutions of today.

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