LUT University

LAPPEENRANTA-LAHTI UNIVERSITY OF TECHNOLOGY LUT

School of Business and Management

Master's programme in Knowledge Management and Leadership

Maija Kuiri

INTELLECTUAL CAPITAL, KNOWLEDGE SHARING AND KNOWLEDGE BROKERING PERSPECTIVES TO INTERNATIONAL PARTNERING OF A UNIVERSITY

Supervisors and examiners   Professor Tuomo Uotila

Senior Researcher Satu Parjanen

TIIVISTELMÄ

Tekijä:	Maija Kuiri
Tutkielma:	Intellectual capital, knowledge sharing and knowledge brokering perspectives to international partnering of a university
	(Yliopiston kansainvälinen partneroituminen tietopääoman, tiedon jakamisen ja tiedon brokeroinnin näkökulmasta)
	Pro gradu, 2020
	113 sivua, 9 kuvaa, 4 taulukkoa, 1 liite
Yksikkö:	Lappeenrannan-Lahden teknillinen yliopisto LUT
	LUT-kauppakorkeakoulu
Koulutusohjelma:	Tietojohtaminen ja johtajuus
Tarkastajat:	1. tarkastaja: professori Tuomo Uotila
	2. tarkastaja: erikoistutkija Satu Parjanen
Avainsanat:	tietopääoma, tiedon jakaminen, tiedon brokerointi, partneroituminen, sosiaalinen pääoma, rakenteellinen aukko

Tässä tutkielmassa tarkasteltiin yliopiston kansainvälistä partneroitumista tietojohtamisen näkökulmasta. Yliopistot toimivat globaalissa toimintaympäristössä ja partneroitumisesta on tullut yhä tärkeämpi osa kansainvälistä yhteistyötä ja tutkielman tavoitteena oli selvittää, millainen tietopääoma, tiedon jakaminen ja tiedon brokerointi tukee yliopiston partneroitumistavoitteita. Kvalitatiivisen tapaustutkimuksen aineisto on kerätty case-yliopiston henkilökunnan haastatteluin ja analyysimenetelmänä on käytetty teoriaohjaavaa sisällönanalyysiä.

Työn tulokset osoittavat, että partneroitumiseen liittyy moninaista tietopääomaa, eikä kyse ole ainoastaan suhdepääomasta. Lisäksi yliopiston tietopääoman eri osa-alueet ovat vahvasti toisiinsa sidoksissa partneroitumisen näkökulmasta tarkasteltuna, ja sekä haasteita että hyviä käytäntöjä löytyy niin inhimillisen, rakenne- kuin suhdepääoman osalta. Partneroitumisessa organisaation suhdepääoma kasvaa, mutta kysymys ei ole vain kontaktien luomisesta, jakamisesta ja linkittämisestä, vaan siihen ovat sidoksissa niin yksilö -ja yksikkötason asiantuntemus, toiminta, kokemukset ja suunnitelmat kuin datan hyödyntäminen, sisäinen yhteistyö ja siihen kannustava organisaatiokulttuuri.

Partneroitumista tukeva tieto ja tarvittava tarkkuustaso riippuu paljon henkilön tehtävistä ja asemasta. Tiedon jakamisessa sekä virallisten että epävirallisten kanavien merkitys on suuri kuten myös jakamista tukevalla johtamisella. Olemassa olevista tiedon jakamiskanavista huolimatta yliopiston kansainvälisen partneroitumisen tarkastelu osoitti useita tietoaukkoja kaikilla tietopääoman osa-alueilla, mutta toisaalta myös olemassa olevaa brokerointia, jolla erillään olevia tietoja ja ihmisiä yhdistetään. Brokereina toimii niin sisäisiä kuin ulkoisia henkilöitä ja organisaatioita, mutta osa-aikaisen brokeriroolin käyttöönotto näyttäisi vastaavan tarpeeseen yhdistää tutkimuksessa löydettyjä tietoaukkoja.

ABSTRACT

This thesis examined international partnering of a university from the knowledge management viewpoint. Universities operate in a global environment, and partnering has become increasingly important part of international cooperation and the target of this thesis was to find out, what kind of intellectual capital, knowledge sharing and knowledge brokering support the international partnering aim of a university. The material of this qualitative case study was gathered by interviewing staff members of the case university and the used analysis method is theory-guided content analysis.

The results of the thesis show that multiple intellectual capital is linked to partnering, and the question is not only about relational capital. In addition, the different elements of intellectual capital of the university are strongly interlinked when viewed from the partnering perspective, and there exist both challenges and best practises related to human, structural and relational assets. Partnering increases the relational assets of an organisation, but the question is not only about creating, sharing and linking contacts, but partnering is related to both expertise, activities, experiences and plans of individuals and units and to data utilisation, internal cooperation and organisational culture supporting it.

Knowledge supporting partnering and the required accuracy level depend much about individual's tasks and position. In knowledge sharing the significance of both formal and informal channels if big, as well as the management, which supports knowledge sharing. Despite the existing knowledge sharing channels, the analysis showed several knowledge gaps related to all elements of intellectual capital, but also existing brokering activities, which link disconnected matters and individuals. Both internal and external persons and organisations operate as brokers, but introducing a part-time broker role would seem to respond to the need to connect the knowledge gaps identified in this research.

TABLE OF CONTENT

APPENDICES

Appendix I. Interview questions

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

This thesis deals with international partnering in the higher education sector and examines this activity and goal from the knowledge management perspective. The essence of reliable partners has only been strengthened during the covid-19 pandemic in the spring 2020, which has practically stopped all travelling and face-to-face meetings and transferred communication and meetings to happen online. The pandemic affected also this research, which started around mid-March, only a few days before the whole Finland was practically closed and also the higher education sector shifted to remote work and studying.

1.1. Background of the research

Universities are by their nature global actors and the whole higher education sector has become increasingly international (see e.g. Wihlborg & Robson 2018, Kristensen & Karlsen 2018). The higher education sector has faced changes also in this regard, and there are multiple drivers for partnering and forming institutional alliances (e.g. Kinser & Green 2009, Horta & Patrício 2016, Grant & Baden-Fuller 2004). This theme is topical for the case university, which aims at forming institutional alliances to support and complement personal and project level partnerships to meet the challenges and changes of the higher education sector. The challenge is to combine top-down, strategically planned institutional approach with emergent bottom-up activities at the individual level without jeopardising either approach because they are both needed also in the future.

The area of internationalization of higher education looks like being relatively widely explored, but most of the current research seem to focus on internationalization of African or Asian universities (see e.g. Chapman et al. 2014, Semali et al. 2013), and the transatlantic dimension seems also having been covered (see e.g. Horta & Patrício 2016). The European higher education sector cannot be said to be an untapped area, and the recent study of Kristensen & Karlsen (2018) focuses on the internationalization

at technical universities in the Nordic countries. However, it looks like that the international partnering of European and especially the Finnish higher education sector has not been very widely studied during the recent years.

Taken that it is specifically knowledge which is the corner stone for creating competitive advantage (Lönnqvist et al. 2005, 85) and that it is the basic mission of universities to create new knowledge, it is worth having a knowledge management view to international partnering. Different aspects of knowledge management and also knowledge processes in the higher education sector have been relatively broadly covered in earlier research (see e.g. Annansingh et al. 2017, Martin & Marion 2005, Hautala 2008, Gill 2009, Ramjaevon & Rowley 2017, Lee 2013) despite the situation that knowledge management has been more widely studied in the business environment. The intangible asset view to universities is not a new one (see e.g. Secundo et al. 2010, Ramírez & Gordillo 2014, Bejinaru 2017, Siboni et al. 2013, Veltri et al. 2012.), but there does not seem to be much research on the intangibles from the international partnering view in particular. This research strives for getting new perspectives to intangibles by viewing the best practices and challenges related to partnering from this viewpoint, which seems to be a relatively untapped area.

There is multiple kind of knowledge possessed in universities (see e.g. Hautala 2008, 133-135) and this thesis examines, what kind of knowledge is involved specifically in international partnering and how it is shared. There is also partnering related knowledge being created during partnership forming activities and it is interesting to understand where and how that knowledge is shared inside the organization. Without sharing the knowledge, it remains at the individual level without becoming organizational knowledge (see Foss et al. 2010, 469-471).

When focusing on the intangibles related to partnering, the aim is to understand, are there any structural holes (see Burt 1992, 18, 27) and to what are they related. Structural holes can be bridged by brokering (e.g. Burt et al. 2013, 530). Knowledge brokering is an area, which looks like having a wide spectrum of recent research (see e.g. Maag et al. 2018, Boari & Rioldazzi 2014, Long et al. 2013, Stea & Pedersen 2017, Hahl et al. 2016, Bergenholtz 2011), also in the higher education context, especially

regarding healthcare related research knowledge brokering (see e.g. Currie & White 2012, Ward et al. 2009, Urquhart et al. 2011). However, it looks like that there seems to be lack of research regarding knowledge brokering in the higher education sector outside the healthcare research and especially in the context of higher education internationalization and international partnering. Thus, this research aims at understanding on one hand, what kind of structural holes there are and on the other hand, what kind of brokering there is related to partnering.

Knowledge brokering creates new linkages, new views and possibilities and hence increases the social capital by new connections of individuals, organizations, matters and activities (see Burt 2004). Social capital affects the generation of intellectual capital, but intellectual capital can also influence the generation of social capital. The organizational advantage is much dependent on their mutual relationship (Nahapiet & Ghoshal 1998, 250-251, 256, 260) Hence, it is interesting to study in this thesis, how different components of intellectual capital are interlinked via brokering to increase understanding of the role of brokering in the context of building international partnerships.

1.2. Key concepts

This research is connected to partnership formation in the higher education sector, to intellectual capital and knowledge brokering and hence the key concepts of the research include university-university partnership, intellectual capital, knowledge processes, knowledge brokering, structural hole and social capital, which are defined below.

University-university partnership means collaboration between two higher education institutions with the aim of fulfilling certain activities (Chapman et al. 2014, 619).

Intellectual capital refers to "the stock of knowledge in the firm" (Bontis 1999, 444), means the "knowledge that can be converted into value" (Edvinsson & Sullivan 1996,

357), and is also defined to be "the sum of the 'hidden' assets … and the most important source for sustainable competitive advantages" (Roos & Roos 1997, 415).

Knowledge processes refer to creation, sharing, acquisition as well as documentation and storage of knowledge (Andreeva & Kianto 2011: 1018, 1020).

Brokerage refers to bridging different groups in order to gain diversified information (Burt et al. 2013, 530). *Knowledge brokering* refers to in a broader definition to linking ideas of two or more disconnected entities (Bergenholtz 2011, 74) and in a narrow definition to active facilitation activity between different actors to enhance learning (Maag et al. 2018, 2).

Structural hole refers to non-existing ties in networks between two or more contacts (Burt 1992, 18, 27).

Social capital means "the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor" (Adler & Kwon 2002, 23).

1.3.   Aim of the research, research questions and exclusions

This research focuses on the international partnering of higher education institutions, but the role of individuals is essential in it. As previous research suggests (e.g. Amey 2010, 64-66, Beerkens 2002, 298; Ma & Montgomery 2019, 11-12) the focus should be targeted on the actions of individual organization members in the case of institutional partnerships, too, as it is always individuals who initiate, develop and carry on the operations, not organizations. Naturally individuals work and cooperate in the social structures, which are formed of ties between both individuals and organisations, but the key is still the activity of persons even in the case of organizational relationships.

This research deals with the phenomenon of international partnership formation of higher education institutions, which refer to cooperation for fulfilling certain activities (Chapman et al. 2014). The focus is on partnerships with other higher education or research institutions and the core of this research is to understand, what kind of knowledge management is involved in the partnering of a higher education institution. This is due to the situation that there is only knowledge, which can provide the organisation a continuous competitive advantage (Lönnqvist et al. 2005, 85). Knowledge management itself is a multisided research area and therefore this research focuses on a few viewpoints, which seem to be valuable from the partnering viewpoint.

First of all, partnering and the challenges and best practices involved in it are viewed from the intellectual capital viewpoint to understand, what are the intangible assets related to the partnering issue. Intellectual capital means knowledge, with enables value-creation (Edvinsson & Sullivan 1996, 357) and this research aims to understand what this means in the partnering context. Secondly, knowledge is the key asset of higher education institutions in general. The importance of different knowledge management viewpoints in internationalization, partnering and alliance formation of higher education has been outlined by several researches (e.g. Boyle et al. 2012, 309-310, Meier 2011, 18-19, Dooley & Gubbins 2019, 17). This study aims to find out, what is the most relevant knowledge related to partnering. This knowledge as well as other knowledge is created, acquired, shared, documented and stored, and from these knowledge processes (Andreeva & Kianto 2011: 1018, 1020), this research focuses on knowledge sharing related to partnering. Thirdly, partnering means cooperation and relationship with one or several other institutions than your own (Chapman et al. 2014, 619) and also activities between several persons between organizations and inside one organization, but it is likely that not everybody and everything are already connected, but some distances occur. Hence, there is probably room and need for brokering, which means connecting or bridging disconnected entities to get diverse information (Burt et al. 2013, 530).

This research is a qualitative case study, which focuses on the partnering of the case university. The research aims to get thorough understanding and description of the

phenomenon (see Hirsjärvi et al. 2016, 134-135) and examines it via broad empirical material, which is gathered by interviewing persons from different units and organisational levels of the case university.

Hence, the research question is defined as following and has three sub questions, which further define and focus the research, which strives to answer the main research question.

- *What kind of intellectual capital, knowledge sharing and knowledge brokering support international partnering of a university?*
    - o *What are the challenges and best practices in partnering from the intellectual capital viewpoint?*
    - o *What kind of knowledge is involved in partnering and how is it shared?*
    - o *What are the knowledge gaps and knowledge brokers in partnering?*

There are a few exclusions to the study. First of all, universities have and establish partnerships with many different stakeholders both nationally and internationally. However, this study focuses on international partnerships between other universities or higher education or research institutions and hence excludes the area of national partnerships as well as international partnerships between other stakeholders like companies or public authorities or financiers.

Secondly, the focus in on one end of the partnership only and this study does not involve the viewpoint of the partner universities of the organisation under surveillance. In other worlds, this study focuses entirely on the activities, processes and knowledge of the so-called home university, not the partner university.

The third exclusion is regarding students. This study does not include the undergraduate or graduate student viewpoint, but focuses on the perspectives by the staff members, whether academic or support or management staff. It should be noted that doctoral students are included as staff members and they are not excluded.

1.4.   Structure of the research

The beginning of the thesis makes the introduction to the research by describing the background and introducing the key theoretical context and the key concepts the research deals with. The justification of the research is presented based on the above earlier research and the suggested research gap. It also presents the aim of the research and the research question with its sub questions and the areas excluded from the research to provide the frame. After that the focus is on earlier research to outline the theoretical background to which the current research is linked to: international partnership formation in the higher education sector, the field of knowledge management and intellectual capital within higher education sector. The last chapter in the theoretical part is devoted to research regarding knowledge brokering and the creation of social value.

Before focusing on the findings of the empirical material, the thesis outlines the used methods including data collection and analysis and discussion on the reliability and validity of the research. The last chapters are devoted to the discussion based on the empirical findings and the theoretical background followed by the concluding chapter including both theoretical and practical contributions as well as discussion on the limitations of this research and suggestions for further research rising from the current research setting and results.

2. INTERNATIONAL PARTNERING IN HIGHER EDUCATION

International cooperation, various activities and collaboration structures regarding students and studies, research and academic staff in the form of different kind of projects, consortia, mobility, joint articles and programmes etc. are nowadays a component of normal operations in the higher education sector. It could be said that international cooperation is embedded in a university's research and education activities. However, due to ever globalized world, internationalization in the university sector has risen to the subjects of strategic importance (Wihlborg & Robson 2018, 8). Worldwide students are looking for the best institutions to get high-quality education and researchers strive for various international research cooperation possibilities (Kristensen & Karlsen 2018, 19). The field of higher education has for long been international, but has become even more global and led to the formation of different multinational partnerships and as Kristensen & Karlsen note (2018, 19), networks, alliances, etc. collaboration structures are currently essential components of universities.

Many see internationalization valuable *per se*, others see it as a tool for achieving the goals set for the higher education sector in education, research and the third mission of universities (see e.g. Kristensen & Karlsen) 2018, 19-20). Internationalisation can be seen as a living organism of different socio-cultural, economic and political relations, in the processes and practices of which both individuals, teams or whole institutions are participating (Ilieva et al. 2014, 888) and it is linked typically with such issues like research funding, international staff and students, co-authoring of publications, which have influence to the university rankings, too (Wihlborg & Robson 2018, 8). In the chapters below the characteristics and drivers of international cooperation and partnering of universities as well as success factors of partnerships are discussed.

2.1. Drivers of international cooperation and partnering in higher education

Higher education institutions are valuable to economies at different levels via their role in educating employees and increasing entrepreneurship. Currently higher education is facing needs to change due to demands to increase flexibility, transparency, competitiveness as well as comparability. (Secundo et al. 2010, 141.) Competitiveness is increasing in higher education and in the Nordic countries this means a growing emphasis on strategic partnerships and alliances (Kristensen & Karlsen 2018, 20, 31). Competition between higher education institutions is indeed more and more global nowadays and as Edwards (2007, 379) notes, it raises the need to build international strategic partnerships as foreign institutions start to compete for the same research staff, students, resources and reputation. This means that the ages of random internationalisation are over as it cannot meet this challenge, but there is need for more systematic and planned internationalisation plan, which represents a strategic response in the age of globalizing higher education. (Edwards 2007, 379.) The study of Kristensen and Karlsen (2018, 30-31) also outline that strategic approach including strategic choices is needed to ensure successful internationalisation and stress to include also the viewpoints of the environment, strategic capabilities and leadership to enhance internal cooperation. The strategy itself is naturally not sufficient alone, but needs an action plan for implementation. (Kristensen & Karlsen 2018, 30-31.)

What are then the elements of internationalisation that respond to the competitive setting inside the higher education sector? Beerkens (2002, 297-301, 306-313) notices that operations of universities are increasingly international in the form of different consortia, networks, alliances, joint ventures, associations etc, and it is students, academics and employers who all both require and appraise international experience. In the end, it is always individuals, who carry on the cooperative activities, but the increased competition between universities has been the driver to form inter-organisational arrangements, which enable to form alliances with competitors and jointly strive for getting the needed resources like competitive research funding. Naturally, by joining efforts and competencies new synergies are created. (Beerkens 2002, 297-301, 306-313.) The study by Kristensen & Karlsen (2018, 28) shows the

main elements of internationalisation in the Nordic countries to comprise of the following elements: student and staff mobility, the Erasmus+ programme, coordination of international networks, partnerships, meetings and visits, admission of international degree students, advice to the management, management of funding schemes and grants and incoming guest researchers and recruited new international staff members. The growing competition as outlined above is one important aspect in higher education nowadays. Drivers for partnering are multiple and the weight of each dimension varies from case to case. Kinser and Green (2009, 7-9) bring up that partnership can become relevant from the organisational viewpoint, when the mission and values of the institution provide a fit to great extent and there rise new opportunities. On the other side, there needs to be a need, necessity, for the partnership: something that cannot be achieved without partnering and thereby explicit purpose and advantage of the partnership. In the study of Horta and Patrício (2016, 238) funding was considered important, but research aims and the strive to modernise the universities were found out to be more important drivers. Grant and Baden-Fuller (2004, 63, 77-78) outline that there are various kind of strategic alliances and hence the drivers are also diverse. When it comes to knowledge, acquisition and accessing of knowledge may be the main aims, and in their study knowledge accession is more frequent in strategic alliances. Alliances provide ways to integrate knowledge across companies, which in turn gives opportunity to use knowledge efficiently. Alliances aiming at knowledge acquisition, ie. learning, would seem to lead to knowledge converging and the number of them to be limited by absorptive capacity of the companies. But alliances aiming at knowledge accessing would seem to mean even growth in knowledge specialisation and predict alliances to live for longer and be more stable. (Grant & Baden-Fuller 2004, 63, 77-78) The above study concerns primarily the corporate sector, but the study could be also utilized at least partly concerning the higher education sector, too.

According to Chapman et al. (2014, 635) university networks may strengthen the volume of the universities participating in a network's operations. However, as networks increase the complexity while enlarging the resources and volumes, they do not automatically bring success. Hence, the key to success in participating in university networks is to identify and utilize both institutional and individual resources and motivation while taking into account that different participants may have different

priorities, aims, timelines and capacities. In this conjunction, it is important to understand networks as a mean to achieve something, not as an achievement or goal itself. (Chapman et al. 2014, 635.) From the intellectual capital viewpoint Joia and Malheiros (2009, 554-555) outline that alliances or intensive associations mean and require greater understanding of the partners and growing set of linkages and relationships, which in turn result in higher volumes of information and tacit knowledge exchanged. All this results in the generation of intellectual capital. Another valuable point is that a high diversity of different partnerships leads to smaller growth of intellectual capital, and smaller variety is hence followed by higher growth of intellectual capital. Joia and Malheiros' (2009, 554-555) explanation is that diversity causes more difficult internal governance and social aspects of alliances. (Joia & Malheiros 2009, 554-555)

Ayoubi and Al-Habaibeh (2006, 380, 393-394) have stated based on their study that the aims of international partnerships are related to both students and staff, and can have weight on the either dimension. Core things in the student dimension is basically student exchange, cooperative study programs and student recruitment, while the staff dimensions comprise activities like joint research, teaching cooperation, and staff exchange. Ayoubi and Al-Habaibeh (2006, 380, 393-394) created a matrix based on the internationalisation objectives design and implementation: Strategy is realistic if both objectives design and objectives implementation are clear and in order. If objectives are not clear and more ambiguous, but the implementation is clear and less ambiguous there will become a gap, and the internationalisation strategy design would need reformulation. In the third option, if objectives are clear, but the implementation less clarified, the implementation should be reformulated. In the fourth option, if both objectives design and objectives implementation are not clear, but are ambiguous, the whole strategy could be unrealistic and would need reformulation. The authors point out that the strategy for international partnerships should be taken as a continuous process of design, implementation and evaluation to ensure sustainability and success. (Ayoubi & Al-Habaibeh 2006, 380, 393-394.)

Despite the widely shared significance of more planned and systematic, in other words, strategic internationalisation and partnering, Edwards (2007, 369) raises up also the

possible disadvantage of the above which is that the planning most often is focused on what is thought to be the ideal set of activities to enhance the internationalisation goals of the institution rather than is built up based on the present strengths of the existing cooperation. In addition, such plan might neglect a special interest rising among students if it does not fit the plan. (Edwards 2007, 369.)

2.2.   Elements of successful partnering in higher education

Partnerships consider institutions and institutional approach, but several studies stress the buy-in and activities by individuals. Beerkens (2002, 307) is one of them stating that inter-organisational relations heavily rely on the exchange of information and communication between individuals. The critical dimensions, when it comes to inter-organisational partnerships, are the size and scope of cooperation (individual or collective institutional interest; short- or long-term cooperation), as well as the nature of integration (horizontal or vertical integration, ie. higher education or cross-sectoral) and intensity (loose or coordinated cooperation). (Beerkens 2002, 297-298, 306-313.) As emphasized above several times, also in the study of Horta and Patrício (2016, 238) the faculty members and their commitment and their joint activities were stressed as crucial in successful partnering. Even though the question is about institutional partnerships, it is always individuals, who make it happen. (Horta & Patrício 2016, 238.)

Also, Amey (2010, 64-66) states that the champion of each international partnership is essential as e.g. projects are usually linked to the key person. However, to widen participation, understanding and ownership of the partnership it is essential to move from the individual to the collective activity if the partnership wants to be taken as an organisational international partnership. In addition, she points out that if international cooperation is a major part of the higher education institution's future functions, the main international activities must be incorporated to the departmental and institutional level rather than being left for individual undertakings. They may naturally be initiated by individuals, but cannot be operated in a sustainable, long-term way and achieve larger impact if not incorporated to the institutional level and without commitment of the institution. (Amey 2010, 64-66.)

The study of Ma and Montgomery (2019, 11-12) also point out that the personal contacts are the basis and interpersonal relationships, shared interests and networking among academic individuals form the backbone for relationship development. In line with this, the study of Burley et al. (2012, 280-281) regarding higher education consortia raise up the elements of communication, trust, and commitment in the aims of consortia and continue that the balance in the form of joint vision and strategy gained by the members can also affect the needs of different units when it comes to reaching the targets of the consortium. They also note that higher education consortia possess remarkable set of advantages by creative structures, activities and methods and thereby create great changes for the institutions to increase their learning effectiveness. (Burley et al. 2012, 280-281.)

However, strategic planning is needed to embed these relationships at the institutional level to enable development of sustainable international partnerships. Hence, joint understanding is essential also at the institutional level, which enables the creation of more far-reaching, sustainable partnerships via interpersonal contacts. (Ma & Montgomery 2019, 1, 11-12.) The importance of strategic approach is highlighted also in the case of strategic alliances in the corporate world, and those principles and well-working processes could be utilized in universities adapted to the academic sector. First of all, a dedicated alliance function, which is a remarkable investment, in a suitable organisational level has been proven to bring success providing organisational mandate to join resources, help to building contact networks and coordinate the strategic priorities. Different tools for analysis of value-chain and needs (alliance business case phase), evaluation and analysis of partners (assessment and selection phase), negotiations of roles, responsibilities and outcomes (alliance negotiation and governance phase), communication structure, problem-tracking and trust-building (management phase) up to evaluation, reporting and termination planning (assessment and termination phase) for strategic alliance have been useful. In addition, Dyer and Singh (2001, 39-43) point out the importance of external visibility to ensure the improvement in company reputation, gaining of added value and internal coordination to avoid failure because of not being able to secure internal resources for the alliance. (Dyer & Singh 2001, 39-43.)

In addition to appropriateness and necessity, Kinser and Green (2009, 9-10) point out that each partnership must also be reasonable in terms on finances. There are always costs in establishing and running a partnership and despite the situation that financial aspects are typically not the primary drivers for higher education institutions, all partnerships must consider the financial side, too. An important aspect is also the multi-sidedness of a partnership: any partnership needs to bring value for all of its members, ie. win-win setting shouldn't be forgotten. Leadership skills in terms of flexibility, creativity, patience and persuasion are essential in addition to understanding of the financial setting as well as possession of cross-cultural skills have proven to be important elements of successful partnering. (Kinser & Green 2009, 9-10, 17-18.) Semali et al. (2013, 59-60, 64) report on themes which bring success in higher education partnerships: expertise meaning understanding research needs; infrastructure, which is referring to cooperative structures and communication; incentives, which refer to monetary rewards; and patience, by which thy refer to understanding cultural differences in e.g. time management and working norms. They also refer to information sharing, friendship and hospitality, joint problem-solving and adequate financial management as the success-bringing features of a partnership.

The significance of strategic planning is widely shared, but the nature of universities as an expert organisation, which comprises of rather independent faculties or units working on different fields of science with the possibility of having dissimilar goals affects the strategic partnering in many ways. Burley et al. (2012, 280-281) point out that independent aims affect significantly the formation of consortia and the needs and interest of different units might not be aligned. However, they point out the valuable possibility to learn from the independent activities and the knowledge gained within them. In line with the above, Kinser and Green (2009, 10-12) outline that differences in internal agendas are a possible source of challenges and internal incentive and reward structures might not support partnering aims. They also point out that the field of science is typically the first commitment followed by the department and commitment to the institution is somewhere more far away. (Kinser & Green 2009, 10-12.) This naturally affects the formation of institutional level partnership compared to ones inside a discipline or at a departmental level. Adapted from the corporate sector, the most frequent reasons for non-successful alliances are according to Anslinger and Jenk

(2004, 19) the following, which underline the importance of strategic approach as well as commitment of management and other staff: alterations in the partner's strategy, senior management's lack of interest, alliance champion's departure, lack of committed staff to the alliance and conflicts due to organisational culture differences.

In the strategic planning the challenges or possible conflicts are worth of considering, too. The potential conflict sources are such as the following: divergent agendas of partners, conflicting or different understanding of responsibilities, cultural differences, competition and fears between the partners, e.g. in terms of inputs and outputs. (Kinser & Green 2009, 10-12.) Louime et al. (2011, 92-93) also bring up a few challenges regarding international partnerships in education. They can be summarized to compose of understanding the value of international experience and knowledge of foreign languages and awareness of cultural differences. In addition, profound knowledge on educational systems and study programs is essential as well as well-working administrative support. Important aspect is also institutionalisation to assure that the relationship is not dependent on a particular person and has a secured position also after institutional changes like personnel or budget schemes as different institutional changes happen from time to time. (Louime et al. 2011, 92-93.)

Anslinger and Jenk (2004, 18-19) have determined six guidelines based on successful alliances from the corporate sector and they can be adapted to higher education, too. Firstly, objectives should be joint and explicit, and there should be a shared understanding of the alliance's success definition. Secondly, a proper form of the alliance is needed and thirdly, the alliance should have a governance model to ensure smooth decision-making. Fourth aspect is anticipation and preparation towards most likely conflicts. Fifth guideline comprises of the planning aspect as emphasized also above several times, and Anslinger and Jenk (2004, 18-19) point out the importance to plan the evolution and growth of the alliance and conclude with the sixth guideline what comprise of creating indicators to measure the operations and success of the alliance. (Anslinger & Jenk 2004, 18-19)

It is worthwhile to notice the importance of "boundary spanners", who have a significant role in the process of embedding the relationships in the institution. These "boundary

spanners" are the ones, who connect, negotiate and construct relationships with multiple stakeholders and by this diminish the risk of the relationship to be dependent on one person. The "boundary spanners" are said to be the key to forming relationship between multiple persons, which hence means sustainable partnerships in the higher education sector. (Ma & Montgomery 2019, 1, 11-12.) In their study about a science partnership program between universities overseas, Horta and Patrício (2016, 238) also raised up the significant role in bridge building, idea fostering and compromise reaching by "mediators" in the partnership formation and negotiation process: Mediators in this case were the faculty members, who had vast previous experience on the other party by either working in the partner institution or having long experience of working with them. The role and activities of "boundary spanners or mediators", which are both by definition close to the definition of "knowledge or relationship brokers" is discussed in more detail in the chapter four.

3. KNOWLEDGE MANAGEMENT AND INTELLECTUAL CAPITAL

Several studies point out the essence of knowledge management view in the internationalisation of higher education as well as regarding strategic partnerships or alliances (Boyle et al. 2012, 309-310, Meier 2011, 18-19 Dooley & Gubbins 2019, 17 to name a few). At first, this chapter brings an introduction to knowledge management in the higher education sector and after that, gives an overview of the most relevant knowledge processes in universities. Thirdly, this chapter will outline the components of intellectual capital in universities. The fourth sub-chapter focuses on the relation of intellectual capital and social capital.

3.1. Dimensions of knowledge and knowledge management in higher education

To start with, knowledge as a term has multiple dimensions. Kianto et al. (2019, 4) draw attention to different types and forms of knowledge. First of all, explicit knowledge is rational, formal and systematic, can be codified without big efforts, can be passed on to others without challenges and can also be stored in different information systems. On the other hand, tacit knowledge is the most frequent form of human knowledge and is personal, dependent on context and grounded in a person's experiences and practices. Knowledge can be categorized by analytical levels, too, ie. knowledge possessed by individual persons or wider in the community by a large group. An interesting and valuable classification is also knowledge of know-that referring to declarative knowledge, information, description; and knowledge of know-how referring to procedural knowledge, ie. what is the way something is being done or happening. (Kianto et al. 2019, 4-5.)

Knowledge of universities is tacit, explicit and contextual throughout different categories. Hautala's (2008, 133-135) study on knowledge creation in a Finnish university outlines that research groups possess different kind of knowledge: Firstly, social knowledge, which is the stimulating part and both collective and individual; secondly procedural knowledge, referring to the knowledge of the rules of academic

research; thirdly, academic knowledge itself in each discipline; fourthly situational knowledge, the ability to utilise the potential of a moment; and fifthly, cultural knowledge, rather close to situational knowledge, the ability to sense cultural differences in a moment. (Hautala 2008, 133-135.) The personal and institutional aspects will be handled in more detail below when introducing the components of universities' intellectual capital.

Gill (2009, 604) states that universities' operations are heavily dependent on the intellectual and human capital of their academic staff and the recent developments in the global environment regarding competition, technology and globalisation have led also universities to treat and utilize their intellectual resources more in business terms, too. (Gill 2009, 604.) According to Lee and Roth (2013, 1) the main target of knowledge management lies in the recognition and enforcement of knowledge in the institutional and individual levels with the target to achieve better outcomes and hence create sustainable competitive advantage. Also, Lee and Roth (2013, 1) refer to the changing operation environment and to the need to identify the key meaning of internal and external forces and to get the most out of different resources as well as to change the structures and cultures. All this applies to higher education institutions, too. (Lee & Roth, 2013, 1.)

Gill's (2009, 609-611) research proposes the following components of knowledge management process for a small university in general, but those seem to be adaptable also to the internationalisation and partnering agenda of higher education institutions. The components are identification of core competences (including vision and mandate); cultural change to enable long-term sustainability regarding knowledge sharing; strategic leadership to mainly consist of supportive actions to enable long-term operations; community partnerships with political, social, business and residential actors; reward and recognition to cover the whole organisation and strengthen the organisation culture formation through incentives and motivation; as well as creation of knowledge infrastructure and technology (entry, storage, retrieval and distribution of knowledge). (Gill 2009, 609-611.)

The research by Lee and Roth (2013, 2-10) propose four dimensions of knowledge management in the field of higher education, which are very well aligned with Gill's (2009, 609-611) outcomes. The dimensions comprise of leadership (vision, motivation, value of learning, strategic planning); culture (community orientation, trust/openness, collaboration, entrepreneurship, responsiveness); technology (training, synergy, communication, problem-solving orientation, up-to-date technology, storing knowledge); and measurement (effectiveness, evidence-based decision-making, systemic evaluation, integration). (Lee & Roth 2013, 2-10.) The role of leaders cannot be undervalued in this context either. Martin and Marion (2005, 144-148) have studied leadership in knowledge management in the higher education sphere and have identified six leadership roles in higher education knowledge processing. These include: environment manager (to model openness in the organisation); network manager (to support generation and usage of networks); policy manager (to balance policy matter and redefine bureaucracy); crisis manager (to ensure that organisations' targets are fulfilled); knowledge gap identifier (to analyse the components to understand the potential risks); future leader preparation (select key team members to found mentorship programs for future leaders). (Martin & Marion 2005, 144-148.)

3.2.   Knowledge processes in higher education

The commonly used categorisation of knowledge processes is creation, sharing, acquisition and documentation or storage of knowledge (Andreeva & Kianto 2011: 1018, 1020). Knowledge creation and sharing or dissemination is the basic function of a university, as the creation of new scientific knowledge is one of the basic missions of a university. The second mission of a university is to provide academic education based on scientific research, which can be understood as knowledge sharing or dissemination, as well as the third mission of universities, namely societal interaction (Universities Act, 2009). Furthermore, the most valuable knowledge processes of a university to meet the target of building intellectual capital, which possesses high possibilities, are knowledge creation, acquisition, sharing and transformation. When it comes to knowledge strategies, the most common ones are the exploitation,

exploration, acquisition, sharing and creation of knowledge. (Bratinu & Pinzaru 2015, 612, 621).

Annansingh et al. (2016, 1001) write that knowledge creation, dissemination, sharing and exchange in the higher education arena happen in the connection of both individuals, processes, and technologies and that knowledge sharing is the means to enlarge the value of knowledge. This is in line with the study of Sunalai and Beyerlein (2015, 292-293, 300-301), who classified six knowledge management processes, which are used in higher education institutions: sharing, storing, using, creation, acquisition and assessment. They form a continuous cycle with the target to achieve the missions of higher education (teaching, learning, research, societal interaction, performance ranking) and on the other hand they are the factors that influence both the organisational and individual development of higher education institutions. (Sunalai & Beyerlein 2015, 292-293, 300-301.)

As noted above in several researches, creation of new, science-based knowledge is the main mission of universities. The second and third mission are connected to knowledge sharing of the created knowledge and hence these two processes are below further discussed.

Knowledge creation has been studied from various viewpoints. Below a few dimensions, which are most relevant for this study, are discussed. Knowledge creation can be viewed from the external and internal viewpoints: e.g. societal need in the creating of novel knowledge on one hand and enhancement of quality, boosting of the university's science and other internal on the other hand. The study of Siadat et al. (2012, 846, 863-865) bring up dimensions of knowledge creation in a university and the effects of culture on it and utilize the SECI model (Nonaka et al. 2000, 9-10). The first dimension is socialization: exchanging and sharing knowledge and experience between groups or colleagues (from tacit to tacit knowledge). The second is externalization, which refers to sharing and visualizing ideas in the operational level (from tacit to explicit knowledge). The third level is combination, which means that knowledge is transformed into new products, services or management practices (from explicit to explicit knowledge). The final, fourth stage is learning and internalization of

knowledge creation, which means operationalizing the knowledge and kind of "learning by doing" (from explicit to tacit knowledge). Within the dimensions, culture enables to link the organisation's members together and create joint goals and responsibilities larger than an individual's ambitions creating internal commitment. Organizational capital is closely linked to creation of knowledge and social capital. (Siadat et al. 2012, 846, 863-865.)

The study of Hautala (2011, 4-5, 13) discusses academic knowledge creation. The core of knowledge creation in universities is scientific research and in today's academic world there is continuous competition between the scientists in terms of publications, patens and funding. Despite the global nature of science and hence also the global competitive academic environment, knowledge creation practices are born locally from the activities of researchers inside their organisations. Scientific knowledge creation, is naturally the core in universities and Hautala (2011, 4-5, 11) notices that it happens in the context of physical, mental and/or virtual space, in interaction, in *ba* (more detail about *ba*, see e.g. Nonaka et al. 2000). She points out that *ba* is built in connection to the knowledge type and may thereby emphasize social and conceptual closeness, trust and technical clockwork or researchers position in the scientific community. The two other dimensions are person's characteristics which have influence on e.g. interpretation; and structural factors like funding, cooperation or administration. Worthwhile is to note that all dimensions affecting to the building of *ba* cannot be planned, but some of them can indeed, and needs the understanding of the knowledge type expected to be created as well as other factors. Hautala (2011, 4-5, 13) also points out that trust and knowledge of each other is needed, but not necessary in the very personal level. In addition, valuable viewpoint it that new academic staff members are essential from the point of view of ensuring getting new ideas and perceptions. (Hautala, 2011, 4-5, 13.)

In the context of universities, several enablers and barriers of knowledge creation were found in the study by Ramjaevon and Rowley (2017, 371-373). The list of enablers includes such as academic staff with high qualification and wide experience; library and its databases as well as other data systems of organizational knowledge as repositories of knowledge; and incentives which courage to participate in conferences

and other activities to increase expertise of staff. However, barriers also exist and are such as insufficient research promotion mechanisms and policies; shortage of funding and other resources like laboratory base and multidisciplinary or joint research projects with other institutions; high amount of administrative and teaching work; and also limited access to scientific databases. (Ramjaevon & Rowley 2017, 371-373.)

Annansingh et al. (2016, 1001) note that knowledge sharing in the higher education sphere enables developing practices leading to better results. They also note that if knowledge sharing practices are improperly planned and implemented, it can lead to consequences like lack of trust, communication, cooperation and even to threats. Based on their research, trust building is the key to enable knowledge sharing among academics as there are certain risks related to possible conflicting interests due to connection and participation of academics of different career stages and backgrounds. (Annansingh et al. 2016, 1001.) Related to this, Serenko and Bontis (2016, 702) point out that knowledge sharing inside an organisation needs a positive organizational culture to make it possible. It is essential to be able to enhance the building of organizational identity between the staff members in order to enable collaboration and working towards joint aims. This would make it possible to create an environment, in which staff members contribute towards knowledge sharing. (Serenko & Bontis 2016, 702.) McDermott and O'Dell (2001, 84-85) also stress the importance of organizational culture, but point out that this is more about to plan and implement the knowledge management to be in line with the culture than changing the culture. The point is in explicitly showing the essence of knowledge sharing and its linkage to goals and results and "building on the invisible core values". They also recommend to strengthen the already existing networks, ask assistance from those who already are actively engaged in the sharing culture and make it a routine in performance appraisals. (McDermott & O'Dell 2001, 84-85.)

Foss et al. (2010, 458, 469-471) point out in a clear way the importance of knowledge sharing: it enables to convert knowledge of individuals to knowledge of the organisation. They also bring up the importance of organizational culture, which strongly recommends knowledge sharing and notice that the culture may replace paid incentives and also vice versa. On the other hand, Foss et al. continue that informal

and formal practices can be complementary by their influence to knowledge sharing. But contrary to this, formal processes and incentives may have negative influence on the informal modes especially regarding intrinsic motivation as the driver for sharing. This creates challenge for leaders, who need to take into account ambivalence aspects and consider how their actions influence staff members, because there are also differences between the staff members in adoption of the organisation's values and culture. (Foss et al. 2010, 458, 469-471.) Ramjaevon and Rowley (2017, 371-374) also stress the importance of organizational culture, which supports knowledge sharing in a university and see that a good infrastructure including intranet is an essential enabler. They see the lack of incentives to knowledge sharing and collaboration as a barrier, because in their case study promotion policies and incentive structures do not support knowledge sharing and the situation could be improved by having incentives in place. In addition, leadership plays a major role in this, too. If there are constant changes in leadership or non-existing or non-dynamic leadership, it puts challenges to build a knowledge-sharing culture. (Ramjaevon & Rowley 2017, 371-374.)

3.3.   Intellectual capital perspectives to higher education

Intellectual capital refers to the intangible assets in organisations and is most commonly classified to three main components: human, structural (called also organizational) and relational capital (e.g. Roos & Roos 1997, 415-417; Bontis 1998, 66-67; Bontis 1999, 444-449). The first studies concerned the corporate sector, but recently there has been rise in the number of studies regarding also the higher education sector, see e.g. Secundo et al. 2010, Ramírez & Gordillo 2014, Bejinaru 2017, Siboni et al. 2013, Veltri et al. 2012. Human capital refers to the (tacit) knowledge possessed by the individuals of the organisation and can also be defined to be the sum of genetic inheritance, education, experience and attitudes of the individuals (Bontis 1999, 445-446). Human capital is located in the individual employees, but refers to the collective set of all the above knowledge, through which value can be generated (Edvinsson & Sullivan 1996, 358). The structural capital component means the knowledge which lies in the routines and processes of the organisation and includes different organizational infrastructure like technologies and methodologies. Structural

capital has crucial linkage to human capital by enabling its measurement and development in organisations. (Bontis 1999, 447-448.) The third component, relational capital, refers to relationships with customers and all other external stakeholders (Bontis 1999, 448-449).

Intellectual capital has many dimensions and can also be analysed and viewed from many different perspectives. Kianto et al. (2019, 11) note that intellectual capital is multi-dimensional, referring to individual, group, organisational and system levels; to positive and negative features and stress the value derived from its usage in the managerial and decision-making processes. Intellectual capital is also related to actions: employees are focal and knowledge of different human beings becomes beneficial, when it is brought into activities, which create value. The third aspect is contextuality, meaning that intellectual capital is most valuable when possessed collectively, shared though organizational linkages. In addition, intellectual capital is featured by being dynamic, followed by that it needs to be assessed and dealt with dynamic tools and means. (Kianto et al. 2019, 11.) Bejinaru (2017, 513-515), on the other hand, proposes in her research a few main knowledge strategies with the target to increase university's intellectual capital. Dimensions in this viewpoint are operational / potential intellectual capital and also view whether activities take place inside or outside the organisation. Her research outlines that knowledge creation (inside) has the strongest impact on the growth of a university's potential intellectual capital. Continuing from here, knowledge sharing (inside) is according to her the best way to increase the operational intellectual capital as the knowledge level in the university will rise. Furthermore, the aim of knowledge acquisition (outside) is to get knowledge and experience from the outside environment to the university and increase the potential intellectual capital. The fourth dimension is knowledge exchange in a university network (outside), which contributes to the operational intellectual capital by exchanging both academic staff, students and explicit and tacit knowledge. (Bejinaru 2017, 513-515.)

Along with the widely adopted three-dimensional categorization of intellectual capital, there exist recent classifications with additional dimensions. Inkinen et al. (2017, 1163-1165) suggest to separate the relational capital to internal and external relational

capital and identify three additional intellectual capital components, namely entrepreneurial capital, trust capital and renewal capital based on their research in the corporate sector. Entrepreneurial capital has relation with entrepreneurial activities of the staff and is linked to the structural capital and supported by the organizational climate. Renewal capital is related to learning capacity and knowledge creation and is linked somewhat to structural capital. Trust has a significant role in the formation of social capital, knowledge sharing and building of linkages in an organisation and thereby in building competitive advantage. Trust is difficult to copy or transfer as it is strongly linked with organisation's development over time. (Inkinen et al. 2017, 1163-1165.) In an earlier study to the above, Bontis (1999, 445, 450-451) has also brought attention to trust and culture, which he defined the to be drivers of intellectual capital: trust concerns relationships and cooperation both inside and organisation and with its external stakeholders, whereas cultural issues are an important intra-organisational element shown in language, symbols, behaviour and thought.

In universities the intellectual capital is the most important asset. The main mission of universities is to conduct scientific research, provide academic, research-based education and operate in collaboration with different stakeholders in the society (Universities Act, 2009). The mission of universities means that intellectual assets are the backbone of universities' operations. Knowledge is the most valuable result of universities' operations, and can be found integrated in research results and articles, in graduated students as well as in the collections with its external and internal relation (Córcoles 2013, 2). Successful fulfilment of the above tasks of higher education institutions needs a large variety of intellectual capital in all of its components: human assets, structural assets and relational assets (Veltri et al. 2014, 178-179). This three-component division of intellectual capital seems to be widely used regarding the university sector, too (see e.g. Siboni et al. 2013, 423, Córcoles 2013, 5, Bratianu & Pinzaru, 2015, 612-613, Ramírez and Gordillo 2014, 179-180) Also Ramírez and Gordillo (2014, 173-174) outline that intellectual capital is both the main input and output of universities through creation of knowledge by research and education and that the most important investments consider research and human resources. They also point out that intellectual capital of universities means strategic assets, which are vital in the current environment, which is characterized by competition and challenges

due to it. (Ramírez & Gordillo 2014, 173-174, 183). The study by Siboni et al. (2013, 423-426) on Italian university sector outlines that their performance plans pay special attention to intellectual capital, both regarding external stakeholders (networks, visibility, marketing and profiling efforts) and internal management processes (especially information systems and operational efficiency). Though, the study shows less initiatives regarding human capital (like knowledge acquiring by new, qualified employees), which, however, is widely considered as the main intellectual asset of universities. (Siboni et al. 2013, 423-426.)

The key elements of universities' human capital are according to Ramírez and Gordillo (2014, 181) the qualifications and mobility of research and teaching employees, scientific productivity and teaching capacities and competences. According to Secundo et al. (144-145) there are two sub-components particularly relevant for human capital: "attractiveness", ie. ability of getting and maintaining talents, and "efficiency", ie. value compared to the resources used for its creation. Veltri et al. (2014, 179) also outline that human capital in a university comprises of explicit and tacit knowledge of its employees for research and education specifically (professors, researchers, administration staff and service personnel) and is the most important investment object of a university. Córcoles (2013, 5) outline university's human resources to consist of the personnel's knowledge (tacit and explicit) which has been received by education or different processes and activities. Bratianu and Pinzaru (2015, 612) regard human capital in universities to consist of the collective knowledge, skills, experiences, capabilities, motivation, capacities, intelligence of the academic staff and students and point out that the main task of a university is to create knowledge and transfer it to the society. To sum up: the human capital in universities means knowledge, capability and knowhow of research and education as well as of other activities, services and management related to them, which are possessed by the university's human resources at different levels and functions.

Structural capital means based on Ramírez and Gordillo (2014, 181) striving for innovation and improvement, intellectual property and also management quality. Veltri et al. (2014, 182-183) include to the structural capital subcomponents for intellectual capital measurement model such as different hardware and databases and other

infrastructure, patents as well as the social culture of the university. Secundo et al. (2010, 144-145) outline regarding organizational capital that its most important sub-components are innovation and knowledge codification, ie. research articles, projects and spin-offs, and infrastructure development, ie. information systems for research and learning, libraries and laboratories. Córcoles (2013, 5) includes to the university structural capital the explicit knowledge embedded in organizational (operating environment) and technological (databases, software, patents etc.) processes of dissemination, communication and management. Bratianu and Pinzaru (2015, 612-613) note that the most valuable structural capital of a university lies in its managerial and governance elements. To sum up, structural capital of a university consists of organizational culture, management system and processes, databases and documented data and immaterial rights.

When it comes to the third component, relational capital, Ramírez and Gordillo define it in the higher education field to comprise of graduate employability, effectiveness of graduate teaching, student satisfaction as well as of relations with corporations, cooperation with other higher education institutions and the image of the university (Ramírez & Gordillo 2014, 181). Veltri et al. (2014, 182-183) include in their model of measuring the structural capital the following: networks and relationships between external stakeholders for scientific collaboration (like scientific panels and journals) and different collaboration agreements between various institutions and companies. When it comes to relational capital, Secundo et al. (2010, 144-145) outline also two most valuable sub-components: research & development network development, ie. research and education knowledge dissemination to external stakeholders and monitoring of external relations, and international scope, which comprises openness to mobility between international scientific and industrial actors. (Secundo et al. 2010, 144-145.) Córcoles (2013, 5) outline relational capital in universities to comprise of a large group of "economical, political and institutional relationships". Bratianu and Pinzaru (2015, 613) notice the importance of funding and financial resources like state budgets and define the relationships with external stakeholders the most vital ones. They also bring up the substantial role of connections with major employers of educated students and research networks for European Commission funded projects. (Bratianu & Pinzaru 2015, 613.) To sum up: relational capital in a university is the set

of internal and external, national and international relationships, connections and trust with (potential and current) students, customers, research & education partners, financing organisations, other stakeholders as well as reputation, brand and image of the institution.

Research by Secundo et al. (2010, 148-152) showed that different components of intellectual capital are connected. Human and organisational capital are linked: growing number of faculty staff and students is positively related to the increase of applications, projects and publications. Also, organizational capital and relational capital are related: growth in research and education partnerships is connected to increase in applications, projects and international publications. In addition, human capital is related to relational capital: increase in job placements after degree and in the number of students applying for advanced programs are positively linked to the share of students coming abroad and to the number of international partner agreements. (Sedunco et al. 2010, 148-152.)

3.4. The relationship of intellectual capital and social capital

The components of intellectual capital of an organisation, human, structural and relational assets, are interlinked as outlined above. Intellectual capital is also linked to the social capital. In the discussion about intellectual capital, there are according to Kianto and Waajakoski (2010, 4) two other topics, in addition to the intangible asset components, under discussion: dynamic capabilities, ie. creation and adaptation of the intangible assets and social capital, ie. "the social relationships, in which the knowledge processes take place". Viedma Marti (2004, 426, 432-433) refers to the creation of sustainable competitive advantages by twofold intellectual capital: the one residing in the own organisation, but also the one residing in other organisations within their network. This external, relational intellectual capital, can be referred to as the social capital consisting of these existing and potential resources, capabilities and relations of the networked organisation or its individuals. (Nahapiet & Ghoshal 1998, 243; Viedma Marti 2004, 426, 432-433).

Nahapiet and Ghoshal (1998, 250-251, 256, 260) argue that intellectual capital has its roots "deeply embedded in social relations and in the structure of these relations". They continue that social capital affects the capability to integrate knowledge for the purpose of generating intellectual capital, but on the other hand this happens also vice versa and intellectual capital can influence the generation of social capital. The main point of the social capital's influence on the generation of intellectual capital lies in that, how it influences the situations, in which knowledge is exchanged and combined. They argue that as social capital is mutually owned by the related actors, the question is about the joint resources, which lie in and are developed within social relations and their processes and structures. Thus, the relationship of social and intellectual capital is both complex and dynamic, but the one that generates and maintains the organisational advantage (Nahapiet & Ghoshal 1998, 250-251, 256, 260.)

Social capital can be considered as "bonding", referring to close ties inside organisations or between organisations or "bridging" (Kianto & Waajakoski 2010, 12), the latter of which can create value by linking disconnected entities over structural holes (see Burt 1992, 2004). Both "bonding" and "bridging" social capital seem to be necessary in intra- and interorganisational activities (Kianto & Waajakoski 2010, 12). This bridging function, called also brokering, hence can influence the social capital and is dealt with more thoroughly in the next chapter.

4.   KNOWLEDGE BROKERING AND SOCIAL CAPITAL

Persons as individual actors and organisations as collective actors form networks. They are connected via social ties, relationships in different forms (Rodway 2015, 6). But how and by whom are the networks connected? This chapter will have a look at brokering and deal with both social value and structural holes and their influence as well as with the need for brokering rising from the structural holes.

4.1.   Social value creation by brokering between structural holes

Structural holes refer according to Burt to missing connections between persons or organisations (Burt 1992, 18, 27) and can be classified to primary (between person's connections) and secondary (between person's connections and the persons, who could substitute the connection) structural holes (Burt 2015, 150). It is worth noticing that it can well be that persons over the structural hole know about each other, but the key is that they are concentrated on working and sharing information within their own group, which makes the structural hole act according to Burt et al. (2013, 529) like a buffer.

Additionally, the holes can be strengthened by the organisations and persons surrounding it by the organisation's internal coordination and the mutual missing connections of the organisation's members towards outsiders. As Burt (2015, 149-150, 160) notes further, high cohesion inside an organisation or group will strengthen structural holes between the organisations in question. He continues that group cohesion together with disconnectedness with other groups will lead to growing likelihood of the groups having and working with different knowledge. This in turn will lower the group's likelihood for brokerage even though there would be growing opportunities for the groups to get new knowledge from each other. (Burt 2015, 149-150, 160.)

People think and act more in the same way inside than between different groups and no matter what are the group forming characteristics (e.g. geographic location,

organizational subunit, profession etc.) specialization exists inside groups, what in turn is linked via different bridges or brokers. Hence the persons, who are linked to different groups have a larger variety of thinking and acting models, get earlier access to larger variety of information and get experience in transcoding information between different groups. This means that the links are of utmost importance for enabling learning as well as creativity. From the above they gain competitive advantage in detecting and generating good ideas. (Burt 2004, 349-351, 354-356, 388.) Hahl et al. (2016, 135-137) state that the knowledge asymmetry is indeed the feature which features the structural hole meaning that brokers know about the structural hole, but the alters not. Brokers also seem to get more benefits when the alter does not have accurate knowledge on the broker's ties to other alters. They also argue that alters are more keen on being brokered when it is accomplished by a person with a high reputation, due to fear of losing the ties and the benefits they bring. Also trust and friendship seem to lead to increasing willingness to support brokerage and lower knowledge asymmetry. (Hahl et al. 2016, 135-137.)

Long et al. (2013, 10) also point out that brokers are valuable by creating new ideas, by enhancing the quality of creative activities and by enabling the activities and coherence of networks. Here the social capital comes to the picture. It means the benefit gained through persons' existence in a social structure. The links or brokers, however called, between groups are the ones to create new sights and possibilities and thereby brokering activities start being part of social capital due to the connection between structural holes and social capital. (Burt 2004, 351, 354-356, 388.) It is to note that social capital requires elements such as trust, networks and non-compulsory participation (Siadat et al. 2012, 864) and brokering could have a significant role in it.

Brokers (called also e.g. connectors or bridge builders) between disconnected organisations, groups or persons can detect the differences of knowledge, relations, actions etc. of the different surrounding entities and can thereby notice potentially beneficial new combinations and those who would benefit from them. Hereby the structural hole contains potential, which can be utilized with the help of brokerage actions by brokers, who are the connecting persons. Whether a person can enter to the holes is dependent according to Burt (2015, 150-152) on three matters: size of the

network as a large number of connections naturally grows the possibilities for brokerage; density of the network as strong ties between contacts diminish the possibilities for brokerage; and degree of network centralization as small number of contacts linked with other contacts might mean non-existing or shared brokerage possibilities. (Burt 2015, 150-152.)

However, entering the holes does not automatically mean success or results, but higher changes of getting or creating beneficial new information, practices, sources, synthesis etc. (Burt et al. 2013, 539). Regarding ideas, Burt's (2004, 394) research results point out that ideas are created as a result of crossing the individuals from different social worlds, ie. bridging structural holes. However, the distribution of ideas itself happened inside the two social worlds separately and the value of operational integration vanished. (Burt 2004, 394.) Regarding Dufays and Huybrects (2014, 12) social networks are central when speaking about mobilisation and control of information, because the access of an actor to different information is affected by both the structure of the network and by the actor's place in it.

Ramos-Rodríguez et al. (2010, 577-578) argue that social capital as well as intellectual capital have positive influence on the ability to recognize business possibilities and is largely due to the individual's contacts, experience in helping other entrepreneurs, belief in one's capacity as well as higher education, ie. both social and intellectual capital. However, the individual's access to social capital and the relationships seem to be a more significant factor. (Ramos-Rodríguez et al. 2010, 577-578.) This outcome from the corporate sector might be able to be adapted to the higher education sector in the sense that perhaps rich social capital and wide relationship networks could increase the ability to recognise cooperation possibilities.

4.2. Perspectives to brokering activity and the role of a broker

Knowledge brokers can comprise of both individuals and institutions, which mobilize knowledge and generate linkages between researchers and their different audiences (Meyer 2010, 118). Uruquhart et al. (2011, 283, 288) outline in accordance with Meyer

(2010, 118) above that knowledge brokers connect groups as well as persons, who wouldn't without the brokering have any contact with each other. They also point out that the broker roles are dynamic and even though many activities are alike in different circumstances, the specific activities depend on the context. A worthwhile note is the broker's autonomy in tailoring the activities based on the situation and that the broker's impact is affected by the broker's personal features. (Uruquhart et al. 2011, 283, 288.) Following this, Saarela et al. (2014, 334) in their study about knowledge brokerage content factors stress the significance of both context and resources in the selection of knowledge brokering strategies. Burt et al. (2013, 357) also point out the personality issue as well as stress the significance of adjustment according to the context. Long et al. (2013, 1-2, 10) continue that brokers facilitate or coordinate activities, move information among individuals or groups who have either physical or cognitional distance or mistrust to each other, that is the above-mentioned structural hole (Burt 1992, 18). Ward et al. (2009, 8) outline that there could be distinguished three different brokering roles, which are overlapping and in many cases parts of each are needed in one case: management of information, knowledge linking and exchanging and capacity development.

Knowledge brokers have a significant role in mobilising knowledge for creating benefits and value. Long et al. (2013, 12) also summarize their research by concluding that it is specifically brokers who support the managed transfer of knowledge, increase cooperation among persons from both sides of the gap, and enhance the efficiency by bringing ideas from one group to another. Worth noticing in this conjunction is the study of Bergenholtz (2011, 86), in which he outlines that activities based on weak ties and organisations from different fields is a way to lower the risk for unwanted knowledge leak and enhance the possibilities for beneficial knowledge leak. On the other hand, Burt et al. outline that the focal benefit from brokerage across structural holes is the growing number of different kind of contacts. In addition, it's worth to note that not all brokers are able to derive good performance results. The network advantage is obvious, and in this conjunction it's worth to point out that it is persons, who make the brokering and other activities inside and between the networks. Networks, however, can be a source of facilitation, but humans are the ones who make the actions. (Burt et el. 2013, 536-537).

Brokering has positive effects, but also needs resources and might be costly. According to Long et al. brokers can become owners of knowledge or also gatekeepers to it and might need help to operate their role in an optimal way. Brokers create value by bridging the gap and generating ideas as well as by enhancing the quality of creative activities. Brokers can solve conflicts, give advice and create access to knowledge and work towards the creation of strong ties among the environment. In addition to all the positive effects, brokering has also its costs. That means that the broker can become a bottleneck of information and the activity may lead to productivity losses if focus disperses. Also, communication, ties and trust are easier to form between close and known actors and bridging distant actors may require large efforts. However, brokering has the great advantage in linking ideas, increasing understanding as well as cooperation between different actors and groups. (Long et al. 2013, 1-2, 10.) Nahapiet and Ghoshal (1998, 260) also outline that maintaining social capital, especially its relational and cognitive dimensions, causes costs like other investments, too. Ward et al. (2009, 6-7) have outlined some challenges related to brokering. As noticed by others, too, brokering needs and takes time and the division between different broker roles is not always clear. They also outline that the different brokering roles need actually a large variety of different kind of skills. In addition to the above, a big challenge is rooted in the insufficient knowledge about brokering itself: its functions, effects, contextual factors needed etc. (Ward et al. 2009, 6-7.)

Talking about the broker roles, a broker has multiple set of functions, activities or tasks. Research by Boari and Riboldazzi (2014, 689-690, 693) on brokerage roles identified four functions of the broker. Firstly, broker is involved in transcoding between different stakeholders, which can greatly affect knowledge transfer to partners, which is the second role of a broker. The third role of a broker refers to identification of analogies between different social worlds to be able to transfer that into opportunities. Forth role is about synthesis building among activities, different markets and industries. They also note that reputation of the broker, built on earlier activities, is extremely important in the brokerage role. (Boari & Riboldazzi 2014, 689-690, 693.) The study of Cummings et al. (2019, 785) revealed that knowledge brokering is connected to many kinds of activities:" adapting, translating, connecting, acting as an intermediary, match-making, convening of networks and professional learning, connecting supply and demand for

knowledge, catalysing and facilitating". It can be concluded from the above, that the broker role is not static, but very dynamic and leads to creation of social value. Like Cummings et al. (2019, 785) note also of the broker role among the participants of their study: brokering is about adding value.

The study of Rodway (2015, 1, 14-19) on the flow of research knowledge inside a research brokering network shows that in a sparse network there tend to be only few individuals to whom the new connections focus. In addition, if the central, most active persons are removed, the network activity is cut by more than a half. The case study also indicated that only a little information was exchanged outside formal events of the network and that face-to-face meetings are very important. (Rodway 2015, 1, 14-19.) Meyer (2010, 120, 123) also stresses that brokers do not only mobilise knowledge, but are the keys in transforming knowledge to make it better suit the new circumstances and time, in other adjusting it to become more usable. Saarela et al. (2014, 334) outline the importance to negotiate, agree and understand different actor's roles in knowledge exchange. In addition, the actions are not limited to managing or utilizing networks, but also forming them via broker's operations (Boari & Riboldazzi 2014, 693).

From a systemic point of view, Cummings et al. (2019, 789-791) suggest a framework for knowledge management in the international development, which is comprising of practice-based and societal elements. The practice-based include two sub-parts, knowledge processes within both intra- and interorganisational processes. Intraorganizational processes are practice-based and include such tools as ICTs, knowledge management audits or scans, best practices, case studies, peer assist, whereas interorganisational ones are affected by the role of social media and communities of practise and have such tools as ICTs, best practices, case studies, peer assist. Funding is related to both as a limiting element. The societal element refers to cross-domain knowledge integration and co-creation and knowledge ecosystems. It is featured by "multiple knowledges, multi-stakeholder processes, global public good, emphasis on local knowledge, emergence and complexity". This conceptualisation highlights according to Cummings et al. (2019, 789-791) the complex and pluralistic process of knowledge brokering. (Cummings et al. 2019, 789-791.) The above is an

interesting conceptualisation and could be adapted to higher education sphere at least partly.

In this conjunction, it is also important to have a look at the indicators of knowledge brokerage, which can be divided to quantitative and qualitative. Maag et al. (2018, 4, 7) identify five quantitative and three qualitative indicator categories for knowledge brokering. Among the qualitative ones there are such as amount of time spent, number and type of team meetings, number and length of phone calls and discussions, number and length of e-mails, number of research articles and other documents. The qualitative indicators developed by them include demonstrated use of existing knowledge of knowledge brokerage processes, tools and frameworks; received quality of facilitation, ie. contribution of brokerage to the activities and processes and communication; and skills of the individual brokers. They note that the indicators are a source of help for broker's learning of their own activities, for showing the benefits of them as well as for ideation. (Maag et al. 2018, 4, 7.)

One aspect in relation to brokering is prosocial behaviour, its motives and impact, which is discussed in the review by Bolino and Grant (2016, 624-625). Based on research by different scholars on prosocial behaviour they have made a collection of the advantages of prosocial behaviour such as the following: knowledge sharing contributes to better evaluations on employee's performance; mentoring activity affects career positively through better job satisfaction and performance assessment and higher commitment; brokering activity leads with higher probability to key roles regarding innovation; prosocial persons can get better access to both strong, weak and dormant connections; prosocial behaviour lowers the feeling of threat to others and makes them valuable allies and not competitors; helping others solve problems enhances the problem-solving capacity regarding their own issues, too; prosocial behaviour is the key in making organisations or smaller groups effective; higher level of knowledge sharing lowers costs, makes project completion rates higher, increases innovation, revenues and sales. (Bolino & Grant 2016, 624-625.)

Prosocial behaviour has its disadvantages and counter side, too. Prosocial behaviour can be taken as extra to one's tasks and therefore cause stress and overloading. It

takes also significant time and energy of the persons, hence could cause that employees don't fulfil their tasks in full manner. It also becomes costly when applied largely, but the costs are lower and advantages higher, when staff members have high self-concern. In addition, if interests of one group are preferred over another or organisation's rules are not followed, prosociality could cause unfair on unjustified decisions. Also, people need to keep focus to avoid providing something that other people do not actually need. (Bolino & Grant 2016, 626-627, 648-649.) The findings on the positive and counter sides of prosociality by Bolino and Grant (2016) can be interpreted to be in line with the findings of Stea and Pedersen (2017, 668, 686) on the effects of brokering to creativity. They concluded their study by outlining that the effect of brokering to creativity is not linear, but curvilinear meaning that the advantage by getting access to valuable knowledge can be limited by the cognitive costs of that knowledge. Following this, creativity is at higher levels, when brokerage is at intermediate level. Within this, a crucial role plays the work environment, which can enhance the above if providing little disturbances and stressors, especially in the field of research and development, which well aligns with the higher education sector. Persons in the above field tend to utilize the structural opportunities as well as possible, and hence the opportunities which brokering to colleagues not earlier connected offers, but can be sensitive to stressors and disturbances, which cause unfavourable consequences. (Stea & Pedersen 2017, 668, 686.)

Currie and White (2012, 1333, 1353-1355) outline the "team atmosphere" as a factor supporting brokering in the healthcare context. This is linked to the above-mentioned organizational culture. They also bring up, among others, the importance of making brokering possible over different limits between professional hierarchy (high-status, low-status, intermediate status) and that the hierarchy could be mediated by developing knowledge in formal and informal processes and systems. The healthcare sector corresponds to the higher education sector in the sense of professional hierarchy (e.g. professors, senior and junior researchers), and this study could be adapted to the university sector and be a source for learning about overcoming the structural and hierarchical barriers. Importance of peer-to-peer knowledge brokering is stressed in the research, but that draw attention to group level and the informal and formal managerial arrangements within them. (Currie & White 2012, 1333, 1353-1355.)

5. RESEARCH DESIGN

This chapter will disclose the research design and at first present the case university and then describe the research methodology used in this research. After that, the empirical data collection is presented followed by the description how the empirical data was analysed. The last sub-chapter will discuss the validity and reliability of the research.

5.1. The case university

The case organisation of this research is a Finnish university, the operation of which is regulated by the Universities Act (2009). The Act defines the mission of Finnish universities to comprise of promotion of free research and academic education. When accomplishing their mission, the universities also need to promote lifelong learning and interaction with the surrounding society as well as to promote the impact of research on society (Universities Act 2009). Universities receive basic funding from the Ministry of Education and Culture and their operation is measured according to the Universities Core Funding Model. It comprises of results of education activities (completed degrees, continuous learning, number of employed graduates, quality of employment, student feedback), research activities (PhD degree, scientific publications, competitive research funding) and other education and science policy considerations (strategic development, national duties).

International partners and partnerships have a significant role in the achievement of the measured targets of universities, not a goal as such. In the education activities, partners are essential, e.g. as mobility partners, who provide education for the exchange students, and for degree students when it comes to joint or double degree programs. Regarding research activities, international competitive research funding is impossible to obtain without strong consortia. In addition, the number of co-authored scientific publications is constantly increasing, as their impact is higher than publications compiled within national or institutional co-authorship. Researcher and doctoral student mobility arrangements also need international partners, and is usually

seen as a means to form international consortia for the above-mentioned targets. Of course, international experience is a value *per se* for all students and staff members.

The definitions of advancing internationalisation of higher education and research by the Finnish Ministry of Education and Culture state that most of the Finnish higher education institutions have strategic and established partnerships within which they develop research and education in the long term. Partnerships do not undermine the significance of student-based mobility of researcher-based research cooperation, but, on the contrary, at its best institutional relationships can support and strengthen them. National, Scandinavian, European and Global strategic partnerships strengthen the quality of education and research as they provide one path to newest knowledge, foster internationalisation and networking, import and export of know-how as well as support the acquisition of external funding. It is to be noted, that also networks between higher education institutions, both at the European and global level, can represent strategic partnerships. (Minedu 2017, 41.)

The case university is headed by a rector, provost and vice rectors and the supreme decision-making body is the board, the members of which are nominated by the University Collegium. The management group comprises of the rectorate, deans and heads of support services. The university is divided into schools, which are the core of the university's operations and the ones where scientific research is conducted and research-based academic education is provided in different bachelor of science and master of science degree programmes. Doctoral education is given by the doctoral programmes. The schools are headed by a dean and have each a management group. The schools are divided into departments headed by a head of department and research groups headed by a professor. In addition to the schools, the case university has interdisciplinary research platforms. Majority of the research is conducted within research projects, for which funding is applied from external sources. Support services are centralised and provide their expertise to the whole organisation. Hence, the university is using a matrix management system.

5.2.   Research methodology

The target of the research is to increase understanding of the phenomenon under surveillance, ie. international partnering in a university and how is knowledge management, knowledge itself and its sharing, intellectual capital and knowledge brokering involved in it. The aim is not to test results of earlier research with a new empirical material or test hypotheses derived from earlier research or make any statistical analysis. The main aim is to get new, profound knowledge and understanding of the research themes and work out what kind of views people in the case university have to the research problem and what, how and why they have been doing what they have been doing regarding international partnering. Hence, the research strategy suitable for this research is qualitative (see Hirsjärvi et al. 2015, 139-165, Saaranen-Kauppinen & Puusniekka, 2006).

This study deals much with interpreting the research data and the research plan has been flexible and been shaped during the research. The core of this research is the empirical material, though the approach is not inductive, but abductive, theory-guided, as the theory and knowledge formed by earlier research is a source of help in the analysis. Thus, the influence of theory is seen in the analysis and interpretation of the material, but the aim is not in theory testing. (Saaranen-Kauppinen & Puusniekka, 2006, Tuomi & Sarajärvi 2018, chapter 4.7.) Theory was used to focus attention in the empirical material and analyse issues, which have been brought up in earlier research even though in different fields. Abductive analysis does not give strict rules how the empirical material is gathered (Tuomi & Sarajärvi 2018, chapter 4.4.) and hence interviews suit well for the purpose of this study.

The author made a preliminary (pilot) research on the theme during October 2019 – January 2020. The preliminary study helped in forming the research questions, theoretical background and also supported shaping the interview questions. As some additional questions were included among the interview questions and the scope of interviewed persons was six times larger than in the preliminary study, new, deep insights and views were received. The preliminary study also confirmed by its approach and findings, that the abductive approach is a suitable one for the study.

5.3. Empirical data collection

Empirical data for the research was collected by interviews. Flexibility is one of the biggest assets of interviews, as they allow to repeat the questions, ask for clarification, make corrections to misunderstandings etc. (Tuomi & Sarajärvi, chapter 3.1.) As the focus is on the operations and knowledge of the case university, the interviewees were also invited from the case university. The aim was to get a wide range of different views and insights (compare Tuomi & Sarajärvi 2018, chapter 3.1.) to international partnering in the field of scientific research and academic education and to get as profound understanding of the different aspects affecting partnering as possible. Therefore altogether 31 persons were interviewed in single and group interviews. The total number of interviews was 12. Hirsjärvi et al. (2015, 210-211) have outlined that a group interview is on one side efficient enabling getting information from several persons at the same time, but on the other hand a group could have dominant persons which lead the content to some direction.

The aim was to get different viewpoints and therefore the interviewees comprised of representatives of different personnel groups: rectorate, deans, heads of research platforms, professors and other senior researchers, heads of degree programs, post-doctoral researchers, doctoral students as well as administrative personnel. All the interviewees have some experience in international cooperation and the interviewees were also asked to recommend persons they saw to fit among the group of interviewees. Not everybody could be interviewed, and it is not simply to argue, when saturation is reached as one could never know, what a new group of informants would say. However, keeping in mind the research question with the sub questions, it could be said that saturation seemed to be reached as the last interviews did not actually bring new views to the areas under surveillance and the author was confident that there is enough empirical material to reach the aims of the research. (see Saaranen-Kauppinen & Puusniekka, 2006.) Naturally there were a lot of issues which came up during the interviews and there was lively discussion, but not everything discussed was linked to the research questions.

Due to challenges in finding common times, three interviews were with a single person and one interview had two persons. This was partly caused by time zones as three of the interviewees were during the time of the interview located in Australia and the United States having their visiting researcher period while the rest of the interviewees were located in Finland. As Hirsjärvi et al. note, interviews can be held as single, pair or group interviews and they could complement each other (2015, 210).

The interviews were semi-structured and were built around four themes, which are in the core of this research: internationalisation and partner relations of universities, good practices and experiences in networking and international cooperation, knowledge and relationship brokering, as well as knowledge needs and knowledge sharing. The themes in semi-structured interviews are based on earlier knowledge based on earlier research, in other words, the theoretical background (Tuomi & Sarajärvi 2018, chapter 3.1.1.) The interview questions were composed within each theme based on earlier research and research results around the theme and adjusted to the local environment and the higher education sector. The semi-structured interviews are beneficial in the sense that it is possible to ask further and clarifying questions based on the answers (Tuomi & Sarajärvi 2018, chapter 3.1). This was indeed what was used in the interviews of this research as answers to the same themes and questions varied a lot depending on the interview and who were the interviewees. The structure of the interviews can be found in the appendix I. The questions were not always asked in the same order (Hirsjärvi et al. 2016, 205, Tuomi & Sarajärvi 2018, chapter 3.1.) depending on the answers of the interviewees and how they combined different aspects. Questions of all themes were included in each interview, but not necessary all the questions, as especially in group interviews answers covered several aspects.

All the 12 interviews were held in the spring 2020 during the time period from 19th March to 6th April. The author sent an e-mail describing the aim and theme of the interview and suggested several times and the one suiting for all intended for one group was then selected and confirmed. Nobody of the persons addressed refused to participate, but mostly people seemed to be delighted of the opportunity to share their expertise and experience and accepted to participate in the interviews. The interviews itself were arranged via Microsoft Teams as online interviews due to the restricted

access to university premises in the spring 2020 caused by the covid-19 pandemic. In the first few interviews cameras were on, but due to technical problems caused by the large size of video recordings, most of the interviews were held without cameras, and the interviewees only briefly said hello to each other with cameras on. The length of the interviews varied from 1 hour to 1 hour and 50 minutes depending mostly of the number of interviewees allowing each person to have enough time to answer to the questions. Three interviews were held in English and nine in Finnish. In one of the interviews in English one of the three interviewees wished to answer in Finnish, which was acceptable to the other interviewees, because they could understand answers in Finnish, too.

When it comes to the interview data, all the interviews were carefully listened to and transcribed after the recording. Transcribed interviews vary by length from 8 to 15 pages. One recording was lost due to unexpected technical problems, but the author had made notes during and after the interview. In addition, the author asked afterwards a few additional questions from the interviewees, who all kindly replied by e-mail. Thereby also this interview was able to be included in the empirical data. A summary of the interview characteristics is presented below in the table 1.

Table 1 Summary of the data collection interviews.

Number of the interviewees	31
Number of the interviews	12 (3: single person, 1: two persons, 8: 3-4 persons)
Language of the interviews	Finnish and English
Length of the interviews	From 1 hour to 1 hour 50 minutes
Length of the transcribed interviews	Each from 8 to 15 pages
Type of the interviews	Online

5.4. Analysis of empirical data

The interviews were analysed by using qualitative content analysis, which aims at getting a general and condensed description of the researched phenomenon and is by nature textual analysis striving for finding meanings and combining them for larger entities (Tuomi & Sarajärvi 2018, chapter 4.4.). An important point is that interpretations are essential part of content analysis, which provides classification of

the findings, out of which the conclusions need to be drawn. Analysis findings itself are not the actual results. (Tuomi & Sarajärvi 2018, chapter 4.4.2.)

The transcribed material was analysed keeping in mind the research questions as well as the theoretical background, which guided the author in finding the relevant points for this research and classifying them. In practise, while the author was reading the transcribed interviews, she wrote down the relevant issues and put them on a whiteboard on the wall and grouped them under the research questions with the help of the theoretical background.

After that the author read through the research material once again to make sure that any relevant issues were not left without attention. The grouped material was then described in writing before drawing the conclusions and discussing the findings of the research.

5.5.   Reliability and validity of the research

Reliability and validity of research have risen in the context of quantitative research. Reliability refers to the ability of research to produce stable and consistent results, ie. that results are not random. Validity refers to the ability of the research method to measure what is meant to be measured. (Hirsjärvi et al. 2015, 231-232.) In qualitative research there are several research traditions and thus also several approaches to assessing them. Hence, there does not exist clear rules for assessing the reliability and validity of research, but it should be assessed by drawing attention to its internal coherence. (Tuomi & Sarajärvi 2018, ch. 6). It is worth to include in a research a clear description of all the different phases of the research including interviews and hence providing information of how, when, from whom the data was collected and how the data was handled (Hirsjärvi et al. 2018, 232-233).

Referring to the above, the research process including interviews and the analysis of the empirical material has been described as detailed as possible. In addition, attention has been drawn to the coherence of the whole research, to the linkages of different

phases of the research and also of the different chapters of the written report. The key idea has been that the report is logically constructed and that the aim of the research and the striving for getting answers to the research questions guides the whole work. According to Saaranen-Kauppinen and Puusniekka (2006) preliminary tests and rehearsals usually increase the reliability of data collection by interviews. Also recording of interviews increases reliability. (Saaranen-Kauppinen & Puusniekka, 2006.) In this research the preliminary research was a source of confirmation of the approach and also guided to make additions to the research questions. The interviews were also recorded and transcribed, which allowed to return to the answers several times. From these points of view, the research seems to have been done carefully, logically and in a reliable way.

However, it is worth considering critically, how the research theme and nature have affected the answers of the interviewees and discuss on one hand, have the interviewees answered the questions honestly and on the other hand, what is it at the end that the answers do tell about (Saaranen-Kauppinen & Puusniekka, 2006). This is a subject that the author has been considering both before, during and after the interviews. As the interviews were held online and without cameras, the author must rely on the voice, and could not make any observations on how people otherwise reacted on the questions or on the answers of others in the group interviews. It is possible, that some tones and viewpoints are missing in this research. But the author felt a relaxed atmosphere and lively discussion in all of the interviews. In addition, co-creation with the help of answers by the other interviewees was observed and there were also some disagreements to be heard as a different viewpoint, but still no tensions coming up. Based on this, it seems that the interviewees have answered honestly and also critically to the questions. It is possible, that some persons gave so called politically correct answers, but not likely as researchers are educated to be critical, and this was clearly noticed in the answers.

6.   FINDINGS

As described above in more detail, the empirical material was collected by interviewing the case university's personnel mostly in group interviews, which were held online. The material was analysed as earlier described, and the research results are presented in the below sub-chapters. At first the challenges and best practices in partnering are described divided by the main components of intellectual capital: human, structural and relational assets. The second sub-chapter is devoted to the knowledge which is related to partnering and to the sharing of that knowledge. The third sub-chapter deals with brokering and describes what kind of brokering exists and supports the partnering processes and also deals with the potential of brokering regarding the development of international partnering.

6.1.   Elements of intellectual capital in the case university

Intellectual capital of higher education institutions has multiple elements. Following the three-partial division of intellectual capital, the so-called emerging standard (see e.g. Roos & Roos 1997, 415-417; Bontis 1998, 66-67), the intellectual capital of the case university is divided into human, structural and relational assets. The elements and sub-elements of intellectual capital based on earlier research on intellectual capital (see e.g. Secundo et al. 2010, 144-153, Siboni et al. 2013, 415-426, Veltri et al. 2012, 179-183, Ramírez & Gordillo 2014, 177-185) of the case university are described in the figure 1 below. Humans assets refer to all explicit and tacit knowledge, knowhow, experience and development by the case university's academic, management and support personnel in regard to scientific research, academic education, management and support services as well as the personal characteristics and personal networks of the staff members. The structural capital of the case university comprises of the organizational culture, management system and processes, data systems and the documented data in different platforms and systems as well as of immaterial rights. The relational assets include relations and ties and trust with both internal and external stakeholders: internal refer to other staff members, external to customers, whether

persons or organisations, domestic and foreign partners and financiers and other stakeholders as well as to the reputation and brand of the case university.

```
                  ┌─────────────────────────────────────────┐
                  │  Intellectual capital in the case university │
                  └─────────────────────────────────────────┘
```

Intellectual capital in the case university

Human assets | **Structural assets** | **Relational assets**

Explicit and tacit knowledge, knowhow, experience, development of academic, management and support personnel regarding

Research
- Substance knowledge in focus areas
- Knowledge of scientific methods
- Research projects and other research related

Education
- Substance knowledge
- Knowledge of pedagogy and educational methods
- Education projects and other education related

Management
- Core processes of research, education and societal interaction
- Different organizational levels

Administrative and support services
- Research and project services, finance, HR, student counselling, student services, library, technical staff, perfomance guidance and quality work etc.

Personal qualities

Personal networks
- Internal and external

Organizational culture
- Values
- Athmosphere

Management system and processes
- Strategy, guiding principles
- Contract with the Ministry of education, targets of results
- Rules and guidelines
- Management by results of units and personnel
- Development and evaluation processes of research and education

Data systems and documented data
- Infrastructure and data systems of research, education and support services
- Connections with national and international stakeholders' systems (eg. national data collection, Education Statistics Finland, publication systems)

Immaterial rights
- Copyrights
- Patents

Relations and trust with internal stakeholders
- Academic staff (professors, researchers, teachers, etc.)
- Management
- Administrative and support personnel

Relations and trust with external customers
- Degree students
- Customers of continuous learning (open university studies and continuous education)
- Customers of RDI-projects and services

Relations and trust with domestic and foreign partners
- Research partners
- Educational partners
- Companies, public organizations

Relations and trust with external domestic and foreign financiers
- Ministry of education and other ministries
- Financiers of research and education (Academy of Finland, European Commission)
- Companies
- Regional councils, local authorities, cities, ELY-centres
- Foundations

Relations and trust with other external stakeholders
- Students unions and organizations
- Employers
- Alumni
- National and regional partners
- Non-profit organizations
- Society

Figure 1   Elements of intellectual capital of the case university divided to human, structural and relational assets.

The international partnering itself falls in the personal level to human assets and in the organizational level to relational assets, but during the analysis of the research material from the interviews if became evident that the phenomenon is far more multisided and there are many different aspects of the intellectual capital as a whole that affects the processes and outcomes related to international partnering.

6.1.1. Challenges and best practices in partnering: human assets perspective

The human assets in partnering could be divided to five main elements: high-level knowledge of academic staff, wide personal international networks of academic staff, knowledge of ways to build personal networks, personal qualities in sharing and brokering knowledge, and expertise and networks of support staff. There are both challenges and best practices within all of the elements.

When it comes to the high-level knowledge and expertise in one's own field, the challenge is that knowledge and expertise of others are not well internally easily visible and thus difficult to take into account in planning. Also lack of time in following what others do was mentioned as a challenge as everybody is concentrating on and following his/her own field of expertise. High-level knowledge and expertise of academic staff is an important asset. The best practice within this is to create and use channels which enable staff to disclose own expertise to enable others to connect for partnering as e.g. projects an consortia need complementary knowledge and by that added value and strong consortia and networks can be created.

Wide personal international networks of academic staff as a part of human assets were highlighted in the material as an important element of partnership building. There are several challenges and also best practices found in the material taken into account the institutional target of developing international partnerships with foreign universities with a more strategic approach. One challenge is that a person's international network is not easily visible internally and the information on the personal partners available. Also, other's than professor's partners and contacts are often forgot to be taken under consideration even though a lot of organisation's other staff than professors also both

go for visits and invite academic staff for a visit. This approach has also its backside, as naturally the partner's position in his/her own organisation affects significantly his/her possibilities to influence on the partnership development as usually any formal or institution wide cooperation requires managerial decisions. Recommendations also came up as a contact person in the partner organisation could recommend his/her partners and the partner organisation for cooperation. This might be challenging as people might anyway wish to make a background check of the recommended persons or institution. However, first linkages could be initiated like this. When it comes to visitors, one challenge is that incoming visitors are not widely known – yet the information usually distributed among the research group or department or even at a school level. But usually staff in other departments or schools are not aware of the visitors and hence not able to for example set up a meeting during his/her stay. However, the best practice regarding personal networks includes creation and using of channels to enable disclosing one's contacts and networks. The material shows that already some sharing of experiences does exist.

When it comes to the knowledge of ways to build personal networks, some challenges were found: Even though there exist some sharing of experiences in personal partnership building, this is not systematic and regular. In addition, the linkage and value of institutional partners seemed to be unclear at the personal level. Also, it looks like that researcher exchanges are widely recommended and also regarded as a necessity in building an academic career, but the encouragement seems not to be fully systematic and covering the whole staff. However, several existing good practices came up: Professors link and introduce junior researchers in the scientific networks and thereby help them to create contacts. Memberships of senior staff in editorial boards and similar is also a very valuable way of extending personal contacts and networks. Attending conferences and network meetings is one of the most common tools in getting in to the scientific and other communities and the importance of attending social events linked to them was highlighted as many interviewees had made long-lasting contacts during social events. Also, international projects was mentioned as an excellent way for a junior researcher who is appointed as a project manager to get many contacts and extend the personal networks. Researcher exchanges at

different stages of the career are together with conferences one of the most common ways to build partnerships.

When it comes to personal qualities in sharing and brokering knowledge, the challenge is that some staff members are hesitant in telling about and letting others to utilize their contacts and partners, however, the good side is that part of staff members are open and willing to share and broker their knowledge, contacts and help others as a natural way of their daily work life. Hence a good practise is to support the emerging sharing culture and acknowledge staff member, who are actively sharing and brokering knowledge and contacts.

Regarding expertise and networks of support staff, the challenge is that the support available in partnering and international cooperation is not visible internally as a whole. It is not very clear, whom to contact in which matter and what are all the support services in terms of international cooperation and partnering. The good side is that the expertise and contacts are at everyone's use and support staff is willing and capable to help and academic staff appreciates the expertise. Hence a good practise is that the support services are centralized allowing the expertise and contacts to be at everyone's use. In addition, a good practise is that there are in the support services staff members, who's task is to support internationalisation and partnering. The table 2 blow summarises the challenges and best practices of human assets.

Table 2   Summary of the main challenges and best practices regarding human assets in partnering.

Human assets	Main challenges	Main best practices
High-level knowledge of academic staff	- Knowledge and expertise of others not visible - Lack of time in following what others do	- Creation and using of channels to disclose own expertise to provide complementary knowledge to partners
Wide international networks of academic staff	- Personal networks and visitors not visible internally - Focus on professors' networks and potential of other staff's contacts not utilized - Contact's position in the partner organisation affect the possibility to influence	- Creation and using of channels to disclose own contacts and networks

	partnering processes and make recommendations.	
Knowledge of ways to build personal networks	- Knowledge sharing on partnering not systematic and regular - Linkage of institutional partners to the personal level not clear - Encouragement and possibilities for researcher exchanges not fully systematic	- Professors introducing junior researchers in networks - Memberships in editorial boards - Participation in conferences and network meetings, including the social events - Participation in international projects and utilization of them to create close contacts - Researcher exchanges
Personal qualities in sharing and brokering knowledge	- Part of staff members are hesitant in telling about and letting others to utilize their contacts and partners	- Supporting sharing culture and acknowledging staff members actively sharing and brokering knowledge
Expertise and networks of support staff	- Support available in partnering and international cooperation not visible as a whole. Not clear, whom to contact in which matter	- Centralized support services allowing expertise and contacts to be at everyone's use - Dedicated staff to support internationalisation and partnering

To conclude, the empirical material revealed a wide set of human assets which are supporting and the necessary elements in partnering. The summary of elements of human assets, which support and are utilized in international partnering is presented in the figure 2 below.

Figure 2   Main elements of human assets related to international partnering.

6.1.2. Challenges and best practices in partnering: structural assets perspective

Structural assets in international partnering can be divided into five main elements, each of which include several sub elements: internal cooperation culture within the case university; partnering not handled as a separate issue, but included in school planning and activities; practises in cooperation with partners; availability of different data; and information sharing practices inside the case university.

Regarding working culture and atmosphere and especially internal cooperation, the material revealed that despite the positive development during the recent years, there is still more sharing and discussions and connecting needed. It was pointed out that many researchers are primarily connected to their own field of science and hence

internally to the research group, but linkage internally within the own university might be and stay minimal. Additionally, internal competition was mentioned as a challenge, though it was pointed out that nowadays it is more common to see other researchers, groups and departments as colleagues than competitors. The best practices related to internal cooperation in the material include larger groups and departments and also the internal organisational changes, which have contributed to lowering barriers between research groups and hence increasing internal cooperation and sharing. If old contacts and internal partners are in the new organisational structure in another internal unit, the personal contacts however remain. The interdisciplinary research platforms are also a way to increase internal cooperation as they combine by their basic task researchers and research groups in different schools and fields.

The management model that partnering is not handled as a separate issue, but included and incorporated in the planning and basic activities of schools is also a structural asset. However, the management model has also some challenges in conjunction of international partnering. Firstly, the organisation and staff is heavily result oriented and there are not specific guidance mechanisms to support longer term investments like strategic partnering; secondly there seems to be lack of time to do things which bring results over long time, instead people are focusing on achieving the short term targets on departmental and individual levels. The third challenge follows the first two ones, because if people are not thinking, planning and working towards achieving long-term goals it does not come actively to their minds to share or broker possibilities they see around in the form of weak signals or have like contacts. In addition, if plans are not transparent or nothing is revealed in the planning stage, it is very difficult to connect the plans or issues to larger or supporting entities. Regarding management system it also came out that group and department meetings are not regular throughout the organisation. There are several good practices which partly respond to the challenges. The first is that international partnering is nowadays included in the annual and longer-term targets and planning, which is pushed by available internal funding, which requires planning. Another best practise is that rectors are actively opening new possibilities and are very willing to be utilized as gate openers when needed.

In addition, there are several existing and well-working practises in cooperation with partners. However, practises do not cover every operation and there exist challenges such as that sharing of successful experiences in partnering not very widely used, especially wider than one's own group. In addition, the concept of strategic partners and plans regarding them are not known throughout the organisation, however, positive examples also exist. It also remains a bit unclear, how they can be utilized at the individual level and what kind of tools exist for research groups. As the existing best practices, the material shows such as inviting the contacts for short- or long-term research and teacher exchanges or simply visits and preparing well-structured and complete proposals beforehand with which partners are contacted as this simply draws the potential of the cooperation right away to a concrete level. Another good practice is the school or departmental level recommendation that every researcher should have at least one co-author as a regular partner, and two or three is even better. In addition, the developed agreement templates for different kind of cooperation modes support and make the cooperation processes smooth.

Data systems and the data itself are also an element of structural capital and there are both challenges and best practises involved in data. A lot of data is available from both internal and external systems, but a full picture of what, where and how is not clear outside the top management level, which seems to be happy with the content level and quality of partnership data. However, a regular researcher cannot easily find information on what kind of data is available, from where or by whom. It also came up that people do not necessarily update their data e.g. regarding researcher visits to databases which thus leads to a situation that data derived from the data systems is not complete, however at a sufficiently good level though. When it comes to external databases, the situation is a bit like regarding the internal ones: The full picture and a list of external sources supporting partnering is not a very clear one and there does not seem to be a very clear division of work between academic units and support services in terms who provides and analyses what kind of information to who and when. On the other hand, in the top management level, regarding the whole university and the schools, there seems to be enough good quality information. Hence, it is a good practice to invest in data systems and in utilizing the data. It was also evident from the material that by making profound analyses and providing data it is possible to get

appreciation from potential or existing partners, thus a good practise is to use data and systematic approach towards partners to convince them of result orientation and seriousness in the partnership.

Information sharing practices inside the case university are also one element of structural capital and included in the management practices. The challenge is that informal channels are predominant and due to their accidentality information may be missing and hence people would welcome more systematic information related to international partnering despite the situation that there are several well-functioning channels like e-mail lists, internal newsletters, intranet and research policy bullet points. Also, management group meeting at the case university and at the school and departmental level are included among the well-working information sharing channels. It was also emphasized that as noted already above, organisational changes have diminished barriers between groups and departments which enhance specifically informal information sharing. Hence, good practises include creation and usage of internal information sharing channels and also reorganisations, which have diminished sharing barriers. It should be emphasized that reorganisations are often referred to in a negative tone, but from the partnering and information sharing viewpoint they have proven to diminishing sharing barriers because new groups and people become members of one's own unit, but the old contacts, which might locate in another unit still remain. The table 3 below summarises the challenges an best practises in structural assets.

Table 3   Summary of the main challenges and best practices regarding structural assets in partnering.

Structural assets	Main challenges	Main best practices
Internal cooperation culture	- More sharing and discussions and connecting needed (internal links in addition to the field of science) despite the positive development - Internal competition - Hesitance towards formal partnerships with partners	- Larger research groups, which contribute to internal cooperation and sharing - Research platforms, which combine researchers and groups in different fields and thus contribute to sharing and cooperation - Reorganisations, which have created new internal

		structures and hence new connections but remained the old contacts from old structures
Management model in which partnering incorporated in school planning and basic activities	- Result orientation and missing mechanisms to support longer term investments like strategic partnering - Lack of time to do things which bring results over long time: focusing on achieving the short-term targets - Possibilities, contacts and weak signals received outside not largely internally shared or brokered - Internal visibility of issues at the planning stage: connecting difficult - Group and department meetings not regular throughout the organisation	- Annual and longer-term planning - Internal funding which requires planning - Rectors working as gate openers when institutional commitment needed
Practises in cooperation with partners	- Sharing of successful experiences in partnering not very widely used - Unclear link of strategic partners to individual level - Unclear which are the tools at individual or group level regarding strategic partners	- Inviting partners to short- and long-term research and teacher exchanges to the case university - Making clear and complete proposals with which partners are contacted - Recommendations that everyone should have at least one foreign co-author and a regular partner - Agreement templates for different purposes
Different data available and at use at the management level	- A lot of data available, but a full picture what, where and how not clear - Updates of data to systems by individuals sometimes missing - Unclear internal cooperation and division of work who collects and analyses what data from external databases	- Investing on and utilizing internal and external data systems to provide partnering related information - Using data and systematic approach to convince partners of result orientation

| Information sharing practices | - Informal channels are predominant and due to their accidentality information may be missing
- More systematic information related to international partnering welcome | - Creation and usage of internal information sharing channels
- Reorganisations, which have diminished sharing barriers |

The summary of structural assets of the case university in terms of international partnering are included in the figure 3 below.
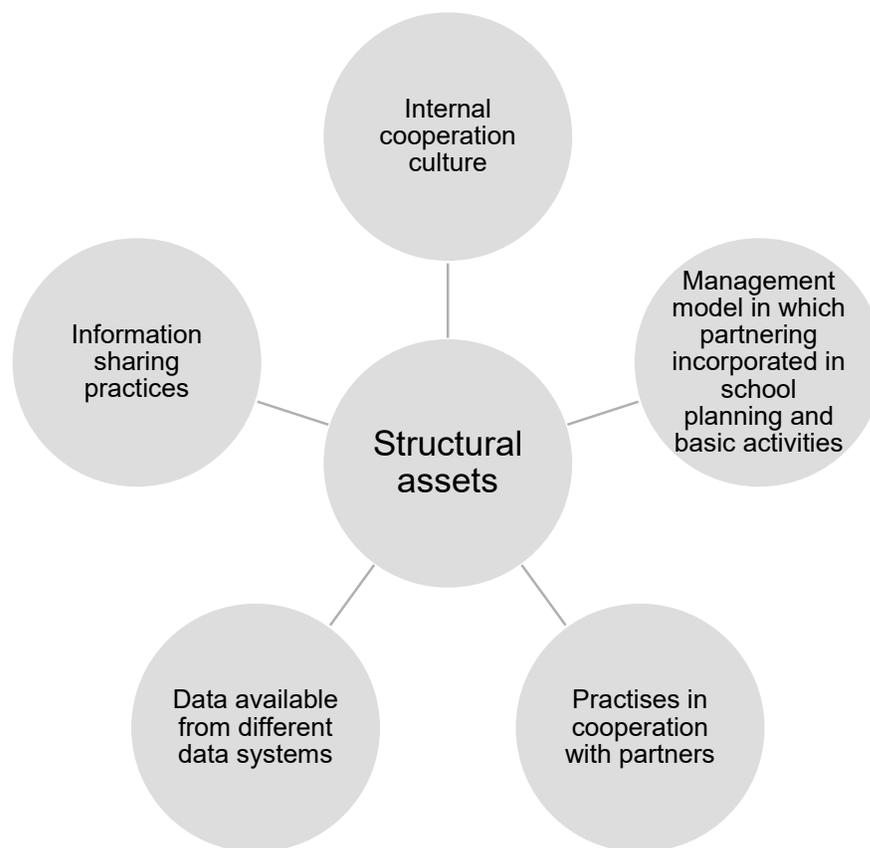
Figure 3   Main elements of structural assets related to international partnering.

6.1.3. Challenges and best practices in partnering: relational assets perspective

This chapter will focus on the findings concerning challenges and best practices in terms of relational assets and bring up viewpoints regarding internal relations and external relations, the latter group of which includes relations with both customers, research and education partners and other stakeholders and includes also reputation and brand related matters.

Internal cooperation relations and trust are essential also within international partnering. However, the material showed that research and education cooperation are largely not planned and discussed together, but handled separately mostly due to the organizational structure that other persons are in charge of educational programs and other persons on research targets. In addition, the contact persons of different cooperative relations or programs and structures are not internally easily visible and gathered together to be easily accessible which diminishes internal contacting. Also, regarding degree programs the material showed non-active cooperation and experience sharing between the programs and their responsible persons. It was also mentioned that there is lack of time in following what others are doing and with whom. Despite the challenges, the positive side is the operations of research platforms, which combine together people and research groups from different departments and research groups and thus boost internal cooperation. Hence, the basic activity of research platforms by combining researchers is a good practice.

When it comes to relations and trust with customers, especially companies, the evident challenge is lack of time as contact building with customers is time-consuming. Companies have various roles as customers ordering contract research, but they can also fall to the category of partners for example in the case of project consortia. The work and role of intermediary, bridging and brokering persons was highlighted as a best practice regarding companies. Relations with companies are valuable, because there is evidence that good experience of university-company relationship has opened access to new academic partners via company's recommendations.

Relations and trust to research and education partners are naturally very important when the question is about partnership formation with international academic institutions. But as already shown this far, there are also a lot of other factors affecting to the partnership building than solely the existing relations. A few challenges came up in the empirical materials, among them there are such as that it was taken problematic, if cooperation is agreed on the top level without involving any operational level as this might cause misunderstandings of the main targets and without well-working connections in the grass-root, operational level, there are not good chances to get the relationship to become a successful one. Additionally, there are variations between the role of external funding among different institutions as well as countries. As the share of external funding is at a very high level in Finland, the role of external funding has a significant role in guiding, with whom to work with, as there is the need to build funding-winning consortia for research projects. In this conjunction, it also came up that even though it is valuable that the case university's researchers make research visits abroad, there is also clear need to get funding and mechanisms to get incoming visitors to the case university. This seems to sometimes be a little in the shadows and not in focus. Also, lack of concrete tools for working with strategic partners was pointed out as a challenge and closely linked to this is the last challenge that individual and organisational aims are not always coherent.

There are a lot of good practices, which partly respond to the above challenges. Memberships and especially active participation in critical networks in each field is essential in getting access to the main players in each field. A good practice is also to build connections to whole research groups or programs within projects, not solely to individual persons, as this makes the cooperation ground more stable in case of people moving from one institution to another. A good practice in forming more formal relationships is to invite academic contacts to participate as members of supervisory groups of doctoral students. A good practice is also to keep the number of partners limited to ensure that there is enough time from each side to keep up the cooperation. Regarding especially new, but also existing contacts it is recommended to respond in due time to proposals and messages, and take into account cultural differences in what is in each case the expected response time. A good practice to get a new linkage working is to focus on getting at least some results quickly to get concrete evidence of

the cooperative results. It was also emphasized, that education networks and connections can be a very fruitful way to boost research cooperation and create linkages that can support also research. And last but not least, all aims and plans should have a solid background in the strategy. If the strategic viewpoint is missing, it easily goes that people just react to different issues and proposals without by themselves being proactive and making all decisions based on strategic goals and aims.

When it comes to relations to other stakeholders, the material showed that alumni cooperation is not very active as well as the cooperation with student union in terms of international partnering. These both could be a source of support in creating partnerships. Regarding other than academic stakeholders it came up that their expectations and aims are not always coherent with the academic aims and result expectations, and this mismatch can create challenges for cooperation. On the other hand, it was seen that cooperation, for example, with international associations is a good practice in creating visibility and boosting reputation of an academic institution.

Reputation and brand are the last element of structural assets and also this element includes challenges but also best practices. Institutional level partnering can face challenges in the case of diverse positions in academic rankings or regarding the indicators which the partners are using in evaluating their partners. Participation in subject rankings was seen as a tool to overcome these barriers. A good practice is also to build and create as many grass-root level cooperative relations as possible with a desired institution and utilize their results for accessing a partner, which has better ranking positions. The table 4 below summarises the challenges and best practises in relational assets.

Table 4   Summary of the main challenges and best practices regarding relational assets in partnering.

Relational assets	Main challenges	Main best practices
Internal cooperation relations	- Research and education cooperation largely not planned and discussed together - Contact persons of different cooperative	- Activities of research platforms, which connect researchers from different units

	- relations not internally visible - Cooperation between programs not active - Lack of time to follow activities of other groups and programs	
Relations to customers, especially companies	- Lack of time as contact building with customers is time-consuming	- Persons with bridging, brokering tasks
Relations to research and education partners	- Agreeing cooperation on the top level without involving operational level - Role of external funding guides with whom to work with and hence can lead to underutilized potential - Funding and mechanisms to get incoming visitors - Lack of concrete tools for working with strategic partners - Individual and organisational aims not always coherent	- Active membership in critically important networks - Bridging connections to the whole research groups, not only to individual researcher (e.g. projects) - Inviting foreign partners to supervisory groups of doctoral students - Limited number of partners to ensure that there are enough resources to handle the partnership well - Responding to proposals in due time (cultural differences in suitable waiting time) - Striving for quick results in new connections to ensure continuing interest - Using education networks and relations as a tool to boost also research - Basing aims and plans for each partner on strategic goals
Relations to other stakeholders	- Alumni cooperation not very active - Student union cooperation on a low level - Mismatch of aims between academic and non-academic partners	- Cooperation with international associations to enhance reputation and visibility
Reputation and brand	- Difference in institutional level ranking positions sometimes create barriers	- Participation in subject rankings - Bottom-up connection building with a better ranked institution to create access

The figure 4 below summarizes the elements of relational assets, which are connected to international partnering of the case university.
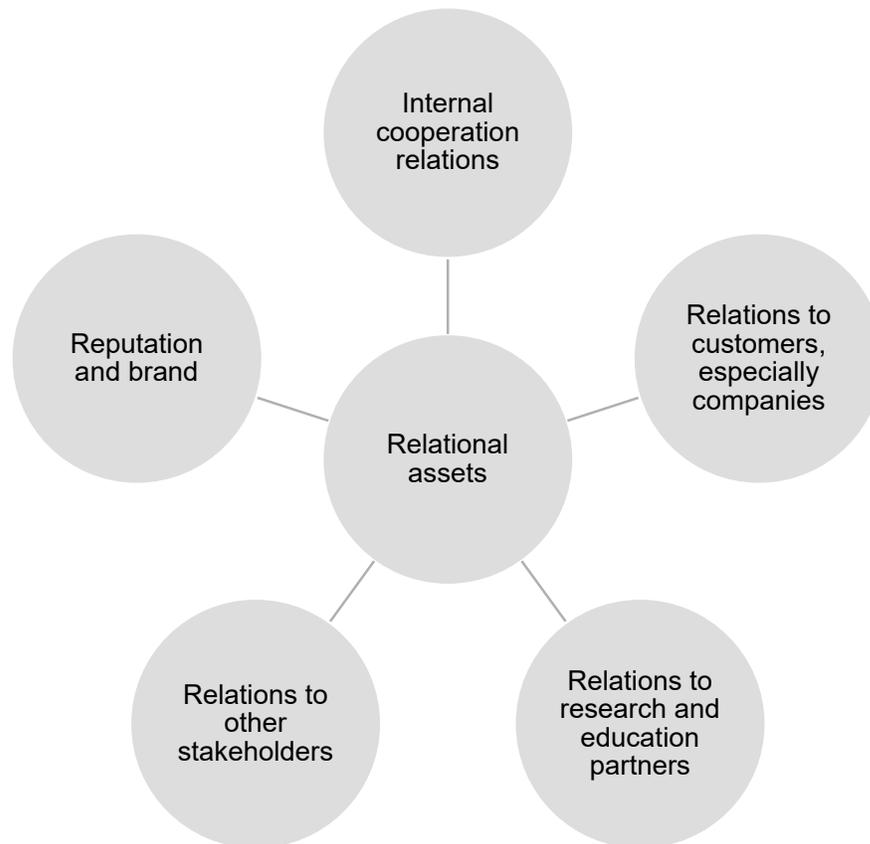
Figure 4   Main elements of relational assets related to international partnering.

6.1.4. Other challenges and best practices

As a challenge, the financial resources were referred to in the research material. Contact building and networking needs people to come together and travelling requires always funding. There is clearly a need for small funds, which could be utilized for inviting researchers to the case university or to travel abroad him/herself, ie. short-term mobilities and visits. In many cases this kind of activities are dependent on project funding as there is not enough Erasmus+ and other scholarships available and in all cases, they seem not to be very suitable for the purpose. From the career development

point of view long-term mobility is recommended and beneficial, but individual researchers need to apply for scholarships from e.g. foundations, as the schools do not have enough basic funding to support these activities and they are not always possible to be covered by project funding.

On the other hand, it was brought up as a best practice that the funding that the case university and its schools have for supporting the development of international strategic partnerships was highly appreciated and taken as a very useful internal tool. Among the interviewees it was observed, that persons in a supervisor or managerial positions were largely aware of the funding intended to support the development of strategic partnerships. However, the existence and the principles of the process and the funding were not largely referred to. Related to this not all interviewees knew about the universities, for the cooperation with whom the funding could be used. Financial assets have a linkage to structural assets, because there is a necessity to have internal rules, guidelines etc. for acquiring and also using different funding related to partnerships. Data system on funds and projects is also a linked structural asset. In addition, financial assets are also linked with relational assets and both funding organisations and partner organisations, as the typical case is that one applies funding in consortium with other organisations, and relations with the funders itself are valuable and needed in the process.

When it comes to physical assets, research infrastructure and laboratories were mentioned several times. Physical research infrastructure was mentioned as an important element of a researcher network, e.g. the case of CERN and within bilateral cooperation as a combination of each other's experience and strengths. A view that was stressed was specifically complementarity, because added value is not created via combining similar facilities and knowledge related to them. Physical resources are closely linked to human assets via knowledge needed to utilize and develop infrastructure and on the other hand infrastructure is linked to relational aspects via networks and joint facilities and laboratories.

6.2. Knowledge and knowledge sharing perspectives in partnering

The target of partnering, ie. enlarging the relational assets of the organisation, department, research group or degree programme, can be supported by different kind of knowledge and intellectual assets. The below chapters outline what kind of knowledge supports partnering based on this research and how and in which forums the knowledge is shared in the case university.

6.2.1. Knowledge supporting partnering

For the purpose of forming international partnerships with foreign academic institutions, there is different kind of knowledge, which helps in the partnering process. There came up different kind of knowledge, which the interviewees see to support the partnering in its different stages. The knowledge is below classified to human and structural assets. The partnering itself concerns relational assets, ie. the target is to build new partnerships or to enlarge or deepen the existing partnerships. In other words, the target is to increase the relational assets of the case university.

When it comes to human assets and the target of partnering, academic staff of the case university seems to look for knowledge on what is the knowledge and areas of expertise of other individuals and research groups (the latter is linked to structural assets, see below in more detail). Without this knowledge, it is difficult to combine the work of different research groups and also to market others to one's own contacts. In addition to the scientific knowledge, people quest for knowledge on the expertise areas of support staff: who is expert in which area and supports in what kind of matters. In addition, the personal networks of other staff members are seen as useful information and in this regard information on the incoming visitors (for research or for teaching) and also on the outgoing researchers and their possible adjunct or associate etc. positions in foreign academic institutions are seen to be valuable. In addition, knowledge and experience of different cooperation models and cooperative relations, funding schemes etc. in the form of good practises and examples is appreciated. External funding is a major area in Finnish university, as a significant share of the total funding of academic universities comes from external sources and the basic funding

from the Ministry of education and culture covers only slightly over half of the total funding. Hence, relations to funding organisations are important (relational assets), but specifically there is quest for profound knowledge and understanding of different funding schemes, which can be utilized to support partnering and international cooperation in general. Knowledge regarding funds and funding sources which have so far been underutilized is referred to be helpful. Additionally, information on the different funding possibilities and calls for proposals is most helpful in an analysed form and "digested". This means that people welcome not just links to the funder and the official regulations, but organisation and field of science specific information, what the funding is about. This is specific knowledge, what is provided in the case university by its support services.

Speaking about structural assets, a full picture of the own organisation and its research groups and their expertise areas and research focus is seen as knowledge, which is useful in terms of internal cooperation in partnership building. This has a linkage to human assets and individual expertise discussed above, but the question is specifically on the group and departmental assets. It is not only the knowledge of the present stage, but also the plans and targets, which are seen beneficial. When the plans and goals of other groups would be internally public and hence known by other groups, interfaces and connectors between the groups is easy to find. Also, data and deeper knowledge about existing partners and partnering plans of other groups and degree programs are useful (linkage to relational assets). This means different networks, projects, project consortia, partners of degree programmes and other cooperation structures. Based on the findings, it would also be helpful to have a list of the contact persons of each network inside the organisation easily accessible. This knowledge is linked to the internal data systems, information that can be derived from them and to the question who has access to which level of information.

Additionally, knowledge about competitors and potential partners is welcome: There is a lot of data available from external databases, but they need interpretation and deep analysis before being able to be utilised, because the interfaces and cross-sections are useful to be found to create added value via complementary assets. Knowledge is seen helpful both on individuals and research groups, but also about project consortia

and projects itself. In addition to numerical data, qualitative data on partners, potential partners and networks is needed: strategies, focus areas, degree programmes, key persons in various networks and alliances.

An outcome of the material is that regarding partner data the material is multi-fold: Others quest for data to support decision-making and see it highly valuable. On the other hand, the hard question is what does institutional data tell about research group or individual levels. Another view to data is that others do not feel to have use for any data on e.g. partners or networks of other groups. In addition, it is also mentioned that access and use of data systems has revealed totally new views when it comes to partner's or potential partner's focus areas and level in terms of some research metrics. It was also mentioned that people usually do not want to have any data as they don't themselves see the need for it, but when provided in an analysed and "digested" form, the data is at the end appreciated and valued. Naturally the usability of data is dependent on one's organizational position and responsibilities. However, the material gave an impression that management level has sufficient level of data and knowledge at their use, but it is not widely known, what kind of data is available upon request and from whom.

The figure 5 below summarizes the knowledge that supports partnering divided to human and structural assets.

Human assets	Structural assets
•Expertise of academic and support staff •Personal networks and connections •Experience and knowledge of cooperation models •Experience and knowledge of funding	•Knowledge of group level focus areas, strategies and plans •Knowledge of existing partners and partnering plans: partners, networks, consortia at group,degree progam, department, school levels •Knowledge of competitors, potential partners based on focus areas, projects and consortia

Figure 5   Knowledge related to human and structural assets that support partnering.

6.2.2. Knowledge sharing tools and forums

There exist many formal and informal knowledge sharing tools and events. Among the formal ones are such as e-mail lists and newsletters on departmental, school and institutional level as well as the intranet. However, intranet was also referred to as a known resource, but which was not regularly accessed and followed by all. Different data systems like research portal or CRM are also a significant source of knowledge, but the challenge is, depending on the data system, that a regular user like a researcher does not have access to any other information than related to his/her own (e.g. research portal) and the departmental level is accessible by the head of department or that the systems is not used at all largely (e.g. CRM).

In addition to mail lists and data systems, regular meetings at different organisational levels like management group meetings and team meetings were considered as a well-working information channel. In addition, weekly "afternoon coffee" gathering in one of the schools and the presentations or info sessions within it were highly appreciated as a user-friendly and convenient way of getting and sharing information.

Additionally, throughout the material the significance of informal knowledge sharing channels and one's own activity was emphasized. In other words, conversations on coffee breaks or during a lunch break in the university canteen are considered to be a major source of valuable information: Info sharing with both one's peers within the group or department and also with the neighbouring group, department or school with the target to find interfaces between groups, focus areas, projects etc.

The data also includes material on enablers of knowledge and information sharing. One of the most influential factors supporting sharing of information are the reorganizations made during the last years and larger research groups as one result of reorganizations. Larger groups boost discussions, interactions and knowledge sharing as old barriers are not existing any more. Closely related to this is the reference to structural reorganizations other than solely forming of larger research groups. When new structures emerge, new people become "own" people belonging to the same organization instead of "the others". One note of the material is that even though

education cooperation is being done and developed for the benefit of students, the student viewpoint seems to be missing from the data and information sharing perspectives. In addition, student unions and similar do not seem to be actively involved in the discussions regarding partners and partnerships.

The knowledge used by persons is affected by the person's position and hence responsibilities. Individual researcher operates heavily on a person-to-person level and everything is based on personal contacts. Thus, databases are not seen useful or supportive. At the managerial level, the importance of personal contacts remains the same, but when taking into consideration the development needs and ambitions on the group, department, school or institutional level, the data is seen on a different light and generally appreciated as a background information supporting decision-making. In this conjunction, it is good to point out that the closer one is to the actual operations and cooperative activities, the more specific information he/she possesses, whereas the broader responsibilities one has, the wider perspective one he/she possesses, but the case specific knowledge gets more general. This is illustrated in the figure 6.
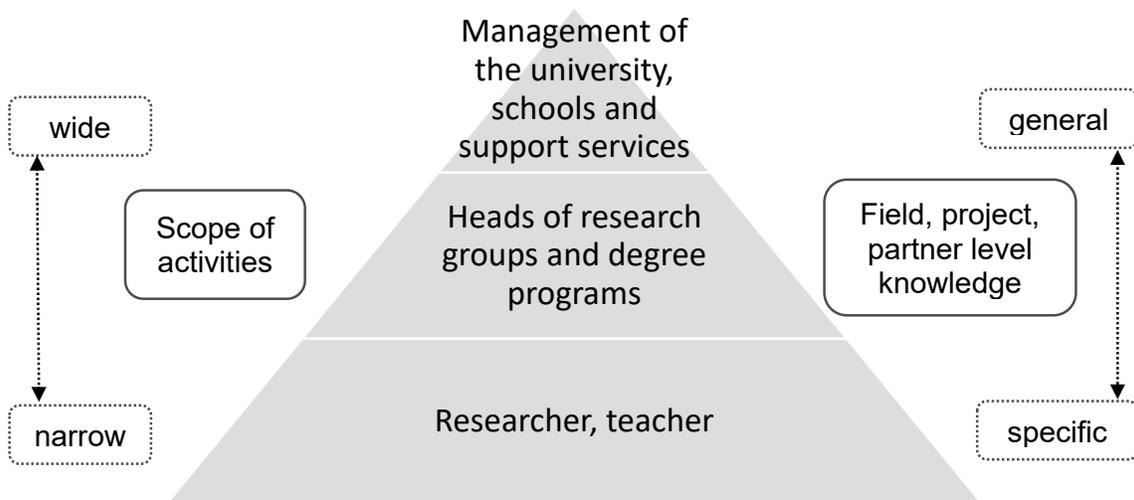
Figure 6   Scope of activities and knowledge depth in organizational levels.

6.3. Knowledge brokering in international partnering

The material indicates different knowledge and structural holes as well as aspects towards knowledge brokering in the context of international partnering. It happens both internally within the case organization's staff members and unit as well as with external people and organizations. There are both individuals and organizations, who undertake knowledge brokering tasks. On one hand, it could be argued that knowledge brokering is embedded in supervisor's duties, but on the other hand, this does not seem to happen throughout the organization and systematically. The material indicates that both serendipity and strategic approach affect knowledge brokering.

6.3.1. Knowledge and structural holes in partnering

As it has been outlined in the earlier chapters, there exist multiple challenges, but also best practices in international partnering of the case organization. Additionally, the knowledge supporting partnering as well as knowledge sharing tools and forums are outlined in the above chapters. Many of the challenges are at least partly responded to via the existing best practices, and thus the structural or knowledge holes are not the whole organization or the whole partnering theme wide. Knowledge sharing, however, happens inside one's own group or already connected persons especially when speaking about formal sharing channels like departmental mailing lists or meetings. Hence, there seems to remain a few knowledge and structural holes which are essential from the partnering target viewpoint.

It looks like that structural holes can be identified inside the case organization in the context of international academic partners. There is not automatically cooperation or coordination between different research groups especially if the research groups are from different departments or especially in the case they come from different schools. Additionally, degree programmes can have or plan cooperation with same academic partners without being aware about the other's plans or actual cooperation. Also, research and education cooperation with foreign partners is typically dealt with separately, though there is now some evidence that one team or group is nowadays

responsible for both and these two basic academic activities are developed hand in hand. In any case, it looks like that there is strong will to start to do so in broader terms, too. Following the above, there can easily be also externally funded projects, mobility and joint research activities with one partner by several units or individuals and nobody is aware of this inside the case organization. This does not necessarily mean a problematic situation, as universities are a typical example of an expert organization, in which individuals and groups or teams work independently. But when the question is about a more systematic approach towards academic partners with the target of creating strategic or formal partnerships, the structural holes like above described are challenging, because they hinder internal cooperation and institution-wide approach.

Regarding the main knowledge and structural gaps, first of all, personal relations are utmost important at different levels. However, the material outlined that the strategic approach to partnering is relatively new, in a starting phase, in the case organization and hence there are not yet strong ties with the management of the desired institutions, but the ties are more in the operative level based on research projects, joint articles and degree program cooperation. Additionally, it looks like that the case university uses rectors as gate openers when organizational commitment is needed or when top management level contacts are culturally needed to start a new relationship. However, there does not seem to be the top management level contacts yet with the counterparts of universities, with which institutional partnerships are wished to be established. Also, the non-visibility of expertise, experience and contacts of academic and support staff create a gap, because they are hence difficult to combine to the institutional approach.

Secondly, the internal and external data systems are not fully utilized: There is not enough knowledge on what kind of data is internally available, from which data systems and by whom and the data collection, analysis and utilization of external databases is currently done by individuals or groups and not coordinated and hence not cumulated. The third gap concerns the management model and organizational culture in terms of internal visibility and openness in group and degree program level partners and plans: Without the knowledge, support to each other and joint plans e.g. towards the same institution are difficult to implement. The fourth gap is regarding internal relations, which are not fully in use. There can be projects or research laboratory cooperation or

joint programs with the one and same institution, but the internal actors are not working together. In addition, internal cooperation in terms of research and education cooperation seems to be missing in a larger scale and be only occasional in some departments. The figure 7 below summarizes the structural and knowledge holes.

Target: creation of institutional partnerships with desired institutions

Human assets	Structural assets	Relational assets

Lack of personal contacts by the top management level to the desired institutions

Data systems underutilized causing knowledge gaps in terms of partners of projects, networks, consortia, programmes etc.

Internal relations not in full use: cooperation and development gap between internal actors regarding the same institutions and between research groups and degree programmes

Non-visibility of expertise, experience and contacts of staff

Management system and organizational culture: partnering plans of groups and programs not internally public; lack of communication of the impact of institutional partners to the individual or group levels

Figure 7   Key structural and knowledge holes related to the development of relational assets.

6.3.2. Knowledge brokering organisations and individuals

When it comes to internal units, subunits or individuals, which act as brokers, there are several of them. First of all, the research platforms unify both research groups and individuals from different departments and schools. Secondly, cross-sectoral projects connect research groups, when different fields of the case university are represented in it. Of course, speaking about individuals, the project manager has a central position. In addition, the third thing connecting groups and individuals over structural holes is external network and funding available via them, e.g. organisation providing funding for both research and education has initiated cooperation and discussions between research groups and degree programmes, which traditionally have been separately developed. An external network can thus stimulate cooperation, which needs internally a contact or coordinator person in order to function systematically. In fact, this person then becomes by nature an internal knowledge broker. The fourth organisational structure enabling and functioning as a broker are management group meetings at the institutional and school levels. They are the nods combining different groups and initiatives and the formal structure for both information and knowledge to flow from the bottom to up and from the top to downwards. Finally, it should be mentioned that each degree program has its head and responsible person and those heads form a group, which has regular meetings. This group and these heads of different degree programs deal a lot with education related questions, however, do not either seem to discuss or share information or make plans regarding international partners together. Even in the case of one degree program, relations rely heavily on individual professors and the cooperative activities are more executed as single operations and the whole picture regarding international cooperation is not always planned coherently. Nevertheless, the heads of degree programs are the valuable connecting dots both from inside the programme and outside the programme to various internal actors.

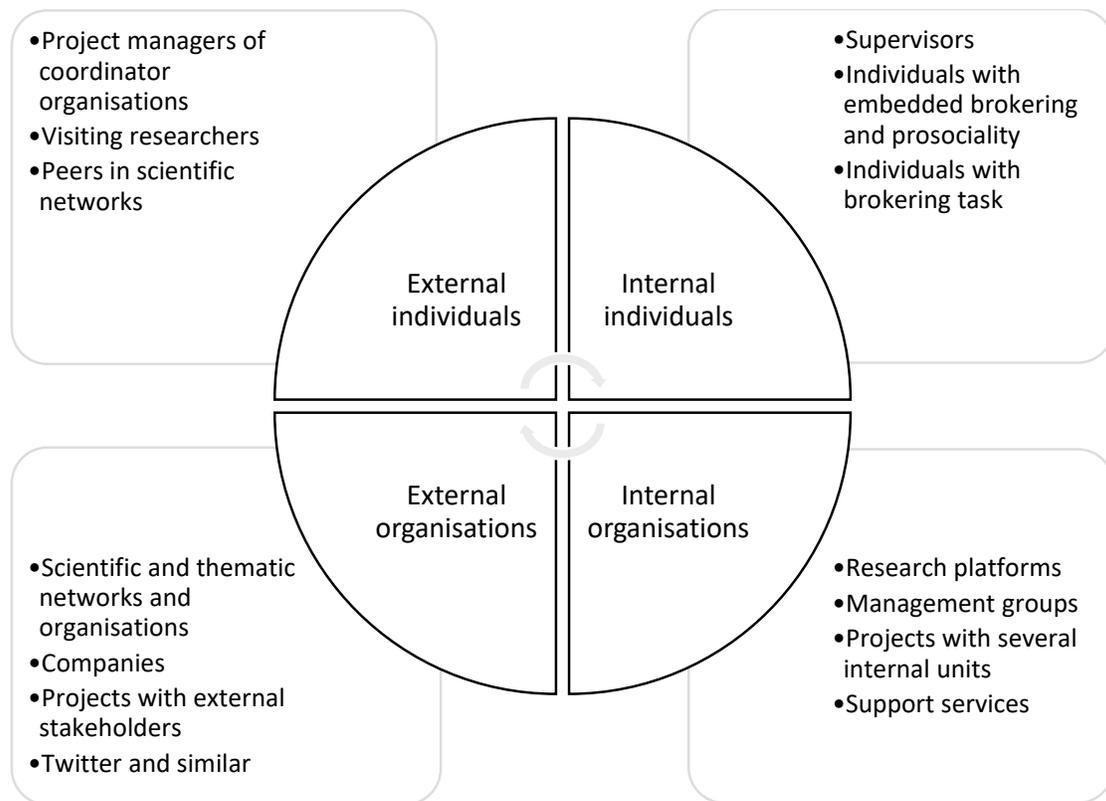Continued from the above to the individual level, there exist individuals, who function as knowledge brokers combining different actors or units over internal structural holes. Several professors have been said to have in them the embedded feature to be able to easily network and make contacts, share them with others, as well as see possibilities and link them with others. On the contrary to these, there exist also

academic staff, who tend to keep all contacts within themselves, but this seems to be diminishing and the openness and sharing culture to be growing. Supervisors are the key to introduce junior researchers to the scientific community and networks in each field and hence they work as brokers connecting the junior researchers over a structural hole to the relevant persons and organisations. The same became evident in the case of scientific networks and the institutional network representative is the essential brokering person in this context. So far there isn't long and broad experience of the recently introduced key account manager system regarding academic institutions, but they become the key persons in connecting other actors internally and externally.

It is not only the academic staff, who fulfil the brokering activities, but several representatives of the support services (administration) connect the internal actors with the external actors from various networks in the operations of which they participate and represent the case university. It should also be noted in this conjunction, that it is embedded in the work of support services to connect actors and provide knowledge. This is also the case of several other persons in the schools like persons whose task is to build projects and coordinate activities within a network or a funder organisation.

In terms of external organisations, several of them function as connectors. There is evidence of the valuable role of companies in linking academic institutions by the companies recommending one institution to the other based on their successful cooperation with both. Different academic forums like scientific conferences and editorial boards also have a significant role in linking researchers from different institutions. Scientific and thematic networks and organisations (e.g. EERA, Scancor, EIT, CERN, accreditation organisations etc.) all have a very important role in connecting people who do not have a common history of cooperation. Different events, where one's peers gather together are also useful. In addition to the above, coordinator organisation's project manager of externally funded projects is a valuable contact point for the consortium members also in regard of cooperation beyond the current project. In addition, incoming visiting professors and researchers as well as outgoing visiting researchers possess great brokering potential, which seems based on the material be nowadays still underutilized. Finally, the role of social media and especially Twitter

seems to be ever rising. They do not constitute a brokering organisation or an individual, but potentially could be taken as a network or forum which connects individuals within some thematic area. The number of contacts based on active presence in social media seems to be rising and is an interesting phenomenon also from the brokering perspective. The figure 8 below summarizes the main identified knowledge brokering organisations and individuals in terms of the international partnering purpose of the case university.

- •Project managers of coordinator organisations
- •Visiting researchers
- •Peers in scientific networks

External individuals

Internal individuals

- •Supervisors
- •Individuals with embedded brokering and prosociality
- •Individuals with brokering task

External organisations

Internal organisations

- •Scientific and thematic networks and organisations
- •Companies
- •Projects with external stakeholders
- •Twitter and similar

- •Research platforms
- •Management groups
- •Projects with several internal units
- •Support services

Figure 8   Main internal and external brokers in international partnering.

7. DISCUSSION

The theme of international partnering of a university is a multisided phenomenon and has been examined in this thesis from the knowledge management viewpoint focusing on the perspectives of intellectual capital, knowledge involved in it and knowledge sharing as well as knowledge brokering and social capital, which in turn is connected to the intellectual capital. The results discussed and the research questions are answered below in the sub chapters.

7.1. Intellectual capital perspectives to challenges and best practices in partnering

Intellectual capital or the intangible assets are most commonly divided into three components: human, structural and relational assets (e.g. Roos & Roos 1997, 415-417; Bontis 1998, 66-67) and also the earlier research concerning higher education intangible assets has used this classification (e.g. Secundo et al. 2010, 144-153, Siboni et al. 2013, 415-426, Veltri et al. 2012, 179-183, Ramírez & Gordillo 2014, 177-185). This research viewed the intangible assets of the case university from the international partnering perspective and classified the challenges and best practises to human, structural and relational assets. The study shows multiple challenges and best practises in all the three components of intangible assets.

International partnering from the institutional perspective refers to relations with foreign academic institutions and hence relational capital. However, this study indicates that the other components of intangible assets are involved and that the human, structural and intellectual capital components are strongly interlinked. Secundo et al. (2010, 148-152) have studied the interlinkage of intangible assets in the higher education sector and noticed the mutual connectedness of all the three components. Also, Veltri et al. (2014, 178-179) have outlined that universities' fulfilment of their tasks need a large variety of intellectual assets in all of its components and based on this research, this seems to consider also the international partnering mission or aim.

Human assets are the most important assets of a university, because diverse knowledge of individuals is the key in fulfilling the university's basic mission in terms of scientific research and academic education (see e.g. Córcoles 2013, 2; Veltri et al. 2014, 179). Human assets in universities have been classified by Ramírez and Gordillo to the qualifications and mobility of research and teaching staff, scientific productivity and teaching capacities and competences (2014, 181) and by Veltri et al. (2014, 179) explicit and tacit knowledge of research and teaching staff. Córcoles (2013, 5) outlines that human assets in universities comprise of tacit and explicit knowledge of staff which is gained by education or activities. Bratianu and Pinzaru (2015, 612) outline in addition to the above also motivation to the components of human assets. Edvinsson and Sullivan (1996, 358) outline that human capital is located in individual staff members, but actually refer to the collective set of knowledge, which is the one that enables value generation.

The challenges and best practises regarding human assets in international partnering of a university can be divided to five categories, which seem to correspond the above described components to great extent: substance knowledge and international networks of academic staff, knowledge related to building personal networks, personal qualities in sharing and brokering knowledge and the expertise and networks of support staff. The personal contacts and networks are not explicitly included in the descriptions of the earlier research on human assets in higher education institutions, but seem to be incorporated in the knowledge and qualification for scientific research and academic mobility, because academic research is by its nature global and having international co-authors is a common practise. It could also be interpreted that the knowledge of networking and contact building is incorporated to the knowledge of research and teaching staff. However, these assets are very central from the partnering view and hence worth listing separately. In this research the expertise of academic and support staff is classified separately, because the nature of the work is different: support staff's basic mission is literally to support the academic staff to fulfil their mission and tasks. However, in the context of international partnering support staff possesses based on this research specific knowledge which is not necessarily possessed by the academic staff, which hence supports the essence of internal knowledge sharing and co-operation. In this research, education knowledge was not

explicitly referred to. It could be interpreted to belong to the qualifications of academic staff and also to be of general nature possessed by all teachers in universities and hence the substance knowledge in each scientific area is the most important one. Additionally, personal qualities in sharing and brokering knowledge are not referred to in earlier research regarding human assets. On one hand they could be said to belong to the same kind of personal qualifications like motivation, on the other hand this could be the new viewpoint this research brings to the human assets discussion, as in this research the brokering and partnering views are linked to the intangible assets discussion.

All the above creates the collective set of human assets from the partnering theme. In a university, in an expert organisation, knowledge, expertise and contacts possessed by individuals can remain separate from each other, what does not necessarily harm the fulfilment of the individual aims and targets of academic staff. However, for the strategic approach in partnering there is need to enhance internal cooperation to integrate e.g. strategic capabilities (Kristensen & Karlsen 2018, 30-31) in the partnering approach and activities.

Findings of this research seem to indicate that in an expert organisation like the case university, both structural and relational assets are needed to connect the assets of individuals to the collective, value creating set of knowledge for the partnering target. Structural assets needed seem to refer to the management model with specific targets but also to organisational culture supporting sharing and internal cooperation as well as well-working data systems, which enable collection and analysis of expertise and connections. In addition, internal relations are part of the structural capital and also needed for the aim of institutional partnership formation. Thus, these findings strengthen the outcome of earlier research on the interconnectedness of intangible assets within higher education institutions (see Secundo et al. 2010, 148-152, Veltri et al. 2014, 178-179).

When it comes to structural assets in higher education institutions, Ramírez and Gordillo (2014, 181) include in those intellectual property, management quality and striving for innovation and improvement, Veltri et al. (2014, 182-183) different

hardware, databases and infrastructure, patents and the social culture. Secundo et al. (2010, 144-145) include innovation and knowledge codification like research articles and projects, information systems for learning and research, libraries and laboratories and Córcoles (2012, 5) explicit knowledge in organisational and technological processes of dissemination, communication and management. Bratianu and Pinzaru (2015, 612-613) emphasize the managerial and governance components in structural capital. In this research the challenges and best practises regarding structural assets include elements, which can be divided to five categories: organisational culture supporting internal cooperation, management model in which partnering is incorporated in school planning and basic activities, practises at use in cooperation with partners, different available data from data systems and the information sharing practises at use.

The challenges related to partnering in terms of relational assets seem to be linked to sharing culture, internal visibility of partnering related activities and plans, usage of data and systematic managerial approach even though there are multiple existing good practises in knowledge sharing, there is increasingly internal cooperation, international partnering is incorporated in the long-term planning and evidence of sufficient level of data and good practises to implement with partners. Thus, the main elements related to partnering from the view of university's structural assets corresponds well to the categories outlined in the above described earlier research. This is evident regarding the organisational culture, management model and data systems related components, which are outlined as components of structural capital in earlier research, but also in this research, which focuses on international partnering. One outcome is that patents and other intellectual property were not referred to at all in the partnering viewpoint. However, this could be one element to be used in marketing, as they could increase the attractiveness of the case university.

Findings of this research suggest that the relational assets are interlinked to the human assets as already referred to above. It is the essence of organisational culture, which can boost internal cooperation, sharing and support working together to reach the individual but also organisational targets. This is strongly supported by the management model with its specific targets that encourages different units and

individuals to work together. The challenge concerning invisibility of knowledge and connections of individuals (human assets) could be partly responded to by well-working data systems. However, it is worth noticing in this conjunction that data systems can support the codification of knowledge and could, based on this research, serve as providing knowledge in terms of partnering when it comes to expertise areas and establishing contacts. However, tacit knowledge e.g. regarding networking and contact building looks like being hard to codify and hence its sharing is much dependent on personal contacts and informal channels. The management model related processes and best practises in partnering, however, could be at least partly codified and thus be shared using the information systems at use.

The third component of intangible assets, relational capital, is referred to comprise of graduate employability, student satisfaction and relations with corporations, other higher education institutions and the image of the university by Ramírez and Gordillo (2014, 181). Veltri et al. (2014, 182-183) describe the relational assets to consist of networks and relationships between external stakeholders for academic cooperation and cooperation arrangements between companies and other institutions. Secundo et al. (2010, 144-145) divide the relational capital to two main components: research and education knowledge dissemination network and to international networks reflected in mobility. Córcoles (2013, 5) refers to in addition to other institutional relations also to economical and political relations and Bratianu and Pinzaru (2015, 613) outline the importance of funding and financial resources and the networks within them as well as the employers in the student dimension.

The main challenges and best practises related to relational assets include in this research, which focuses on partnering on the following: internal cooperation relations, relations to customers, especially companies, relations to research education partners, relations to other stakeholders, and reputation and brand and hence cover the categories used in earlier research. The internal cooperation relations are suggested to be separated from the external ones by Inkinen et al. (2017, 1163-1165), and this research seems to also outline the importance of both when speaking about relationship building with academic institutions and hence supporting the suggested separation. This seems to be logical from the point of view in building institutional

partnership, which thus are meant to be wide and include different units and activities of the institutions. The student dimension is not included in this research.

The relational assets are also linked to the other intangibles regarding also partnering. The institutional relations to all stakeholders have a close linkage to personal contacts and networks, because even though in institutional relationships there are always persons who communicate, take actions and build cooperation. However, the main difference looks like being that in the case of institutional relations the contacts are not dependent on one person, but there are several linkages. Additionally, taken the institutional target to create and maintain strong alliances, internal cooperation relations are important. Also, the connection to structural capital and data systems is valuable: it is different data systems, which include information on the relations with external stakeholders and that information is essential for the internal actors when planning, running and evaluating the outcomes based on the external relations.

The three-dimensional classification of intangible assets provides multisided and thorough perspectives to assets influencing to international partnering of a university. The relational assets include the trust component, which was emphasized in the material as a factor affecting the partnership building. Inkinen et al. (2017, 1163-1165) suggest to separate trust capital, which has a crucial role in the formation of social capital, in knowledge sharing and in the connection building and hence in the building of competitive advantage. Also, Bontis (1999, 445, 450-451) brings up both trust and culture, which he outlines to be the drivers of intellectual capital arguing the importance of trust inside the organisation and towards external partners. Based on the findings of this research, it seems that the trust capital would be worth examining separately. It is suggested to be crucial in partnering both in terms of internal cooperation, because the main aim is to create and maintain institutional level partners, which requires close cooperation and sharing also internally. Externally the personal contacts and the so called "chemistry" between persons was highlighted. This has much to do with trust as persons need to feel that they are treated fairly and that giving something will eventually bring back more.

In addition to intangible assets a few aspects regarding financial and physical assets came out in the material. They are briefly discussed below, because they have a close linkage to the above described intangible assets. Financial assets were referred to in several conjunctions. First of all, in Finland there is constant demand for external funding to complement the basic governmental funding and this directs significantly also partnering, because there is need to have and maintain academic partners, with whom it is possible to create consortia, which are able to attract external funding. Kinser and Green (2009, 9-10, 17-18) have outlined that each partnership needs to be reasonable also in terms of finances and that each partnership needs to consider the financial side even though financial aspects are typically not the primary drivers in the higher education sector. Horta and Patrício (2016, 238) also consider funding to be an important aspect in partnering. Based on this research, the financial side seems to belong to the main drivers for partnering, but nevertheless is not the only one. Financial assets in the form of funds received for externally funded projects look like contributing to the relational assets, because projects typically involve several persons from each partner and hence enlarge links from a personal level towards institutional level. Bratianu and Pinzaru (2015, 613) have pointed out the significant role of research networks for EU funded projects and this research supports this earlier finding.

This research suggests that financial assets in the international partnering context are closely linked to the intangible assets: Acquisition of funding requires knowledge and expertise in the field of science and in projects and applications, in other words human capital. Also, partners are needed and they are initiated based on either human assets, ie. personal contacts by the researcher or based on relational assets, ie. institutional relationships which refer to earlier project consortia, previous research or education cooperation or other multiple linkages etc. It could also be argued that financial assets are linked to structural capital in terms of managerial processes and goals, which direct the cooperation towards partners, who have quest for external funding and to the internal and external data systems, which provide data to guide finding the most suitable partners for the project seeking external funding. Additionally, based on the findings, funding could be referred to as broker, as it combines, e.g. in projects, partners, which are during the project connected in multiple ways.

When it comes to physical assets, they were also referred to within international partnering. Physical assets like research laboratories and equipment seem to support the creation and maintaining of relational assets by their role in joining together researchers in the same field from different institutions. Kinser and Green (2009, 7-9) notice that need or necessity for a partnership is essential: it should bring something that is not achievable without, and the partnership needs to have explicit purpose and bring advantage. In case of a joint laboratory, which combines assets of both parties, creation of a unique combination and hence added value seems obvious. Studies refer to growing competition in the higher education sector (e.g. Kristensen & Karlsen 2018, 20, 31, Secundo et al. 2010, 141) and to the creation of synergies by joining efforts and competences (Beekens 2002, 297-301, 306-313). In this research, joint infra is suggested to be one of the elements via which synergies and added value could be achieved. Additionally, joint physical assets take both time and resources to build and hence look like increasing the commitment level. Joint infra kind of obliges the parties to stay in contact regularly, which in turn contributes to partnership development.

It seems based on this research, that joint physical assets are linked to relational assets, because their creation needs the institutional relations and decisions. On the other hand, there seems to be strong human assets linkage in the background, because also today's institutional relations usually have the initial person-to-person contacts in the beginning, and could be referred to as the key person or champion (see Amey 2010) of the partnership. There is also strong linkage of physical assets like research laboratories or equipment to human assets as the physical assets are used in the university context to research, which creates new knowledge and hence increases the human assets.

Along with financial assets, physical assets could also be referred to as brokers in international partnering, because joint research laboratories or equipment connects people within the research area both in the case of bilateral and networked infrastructure.

To answer the first research sub-question: *"What are the challenges and best practices in partnering from the intellectual capital viewpoint?"*

The main challenges in international partnering regarding human assets include non-visibility and limited sharing of knowledge, expertise, networks, and partnering experience of academic staff and support staff, unclear communication regarding the linkage of personal and institutional partners, non-systematic encouragement for researcher mobility and hesitance in disclosing one's networks. The main best practises include creation of channels to share expertise and networks, utilization of networks, meetings and events to contact building and to linking junior researchers to the scientific community, acknowledgement to active sharing and brokering staff and centralized support services.

The main challenges in international partnering regarding structural assets are related to non-systematic institutional level knowledge sharing and communication on focus areas and plans of groups and departments as well as to non-systematic data usage for planning. In addition, one challenge comprises of individual, short-term result measurements and result orientation as partnering is a very long-term activity involving the community level. In addition, there occurs suspicion on the benefits of institutional partnering, as the concrete tools regarding strategic partners at the individual or group level are a little unclear. However, the main best practices include support to internal cooperation, internal structures and restructuring which creates knowledge sharing channels, incorporation of partnering in school-level planning, investments in internal and external data systems to get data to support decision-making, recommendations to have foreign co-authors and visitors, usage of several departmental information sharing channels and ready-made templates for different cooperation types.

The main challenges in international partnering regarding relational assets include internally non-systematic incorporation of research and education viewpoints to partnering planning and non-regular cooperation between programs and units in partnering aims. Externally, the challenges are related to the combination of top-down and bottom-up initiatives, to lack of concrete tools how to utilize the strategic partnerships and match individual and organisational aims as well as to the role of

external funding. The main best practises in internal cooperation comprise of activities of research platforms to connect and boost joint research and in external cooperation active participation in research networks and creating projects, inviting visitors to the case university, limiting the number of key partners and using education networks for creation of research linkages, too. Additionally, working with international associations support reputation and visibility building and participation in subject rankings and activities to build contacts on project and personal levels to desired institutions are among the good practises.

7.2. Knowledge and knowledge sharing perspectives in partnering

Systematic and planned approach for internationalisation has been emphasized in earlier research (e.g. Edwards 2007, 379, Kristensen & Karlsen 2018, 30-31) and international consortia, networks, alliances, associations etc. are rising from the even increasing international activities (Beerkens 2002, 297). International partnerships require strategic planning (e.g. Amey 2010, 64-66, Ma & Montgomery 2019, 1, 11-12) and considering that even though the desired partnership targets to form institutional alliances, communication, contacting and activities are performed by individuals (Horta & Patrício 2016, 238). Taken the above into account, it looks that different knowledge and knowledge sharing can support successful implementation of the international partnering aims.

When the target is to build larger cooperation schemes, it is logical that knowledge on other staff member's expertise, experience and networks are useful. As stated above several times (e.g. Horta & Patrício 2016, 238), contacts between individuals are a standpoint and there always needs to be individual contacts and trust between persons as organisations do not discuss, negotiate, send messages or agree about cooperation. Without knowing about the others, it is impossible to combine separate issues into larger entities. Contacts and networks of individual staff members are interlinked to institution's relational assets, and in practise the existing multiple contacts with representatives of the one and same partner actually form relational assets of the organisation. The relations exist also without any formal agreements especially in

research cooperation, but in practise many cooperation forms especially regarding students and mobility are contract based. However, the agreement is not needed to have contacts between institutions, but in practise it makes the relationship official.

When the question is about building institutional partnerships, this research shows knowledge beyond the personal level which is helpful and there is quest for knowledge concerning expertise areas and plans of other groups and departments as well as their existing external partners and plans regarding partners. If each group or department works only on its own, it is difficult to get a broader view. However, broad international activity in the individual and group level is the basis for everything. And if one group is the only one working with a specific partner, that is also good to know. The above knowledge has much to do with the internal data systems as they include information e.g. on project and mobility partners, and partly on external databases which include joint articles etc. Along with e.g. Kristensen and Karlsen (2018, 28), Wihlborg and Robson (2018, 8) the main elements of international cooperation are related to student and staff mobility, networks, consortia and partnerships, international students and staff, and funding. Hence, the knowledge supporting partnering based on this study is well in line with the main cooperation formats inside partnerships. But on the other hand, this study showed that the knowledge seen useful depends heavily on the individual's organizational position as many persons do not seem to have even thought about that other's cooperation or earlier cooperation experience with the same partner would anyhow be of interest or use for them. The institutional and more strategic approach is a relatively new one and this study shows that it is not yet rooted in everyone's thinking, but on the other hand shows gradual development in this sense.

Ayoubi and Al-Hababeih (2006, 380, 393-394) point out that partnerships can have either education or research emphasis. This was also strengthened by this study, because mostly education and research cooperation are considered and developed separately, however there seems to be some very recent development towards having the both dimensions taken into account together. This is in line with the emphasis of strategic planning, which is outlined by e.g. Kristensen and Karlsen (2018, 30-31) and Edwards (2007, 379). There is also quest for data on student and research related cooperation but also qualitative information on the partner e.g. its programs and

research groups look like being supportive for the purpose of evaluating the existing partners fit to another program or group. In addition, analysed data on potential partners as well as competitors is also helpful as background information for planning and decision-making and this is much related to external databases. The question is not about the relations and hence relational assets itself, but specifically about the data and information, though here is again a linkage between the intangible asset components.

The challenge what reflects also to the data and knowledge is the balance between the top-down and institutional approach. An individual is primarily focused on achieving his/her short-term goals, but the institutional approach means basically long-term goals and planned activities. For an individual it is enough that there is another researcher, with whom they share research interests and trust and can just start working together, e.g. on a research paper. Educational cooperation is by nature always somewhat institutional, as there is always institutional commitment and agreement needed whether the question is about non-degree or degree mobility or jointly developed course etc. Another point is that the material indicated that if the partner for student and education cooperation is selected carefully, it will lead to research cooperation, too. Hence data and information on the partner is useful for long-term activities.

Findings of this research show also that knowledge and experiences of different funding schemes in a digested format are useful, ie. not just basic information of funding available and how it can be applied, but analysed knowledge, tips and hints and profound understanding what can be funded by which funders. Kinser and Green (2009, 9-10) have pointed out that financial side needs to be always considered in each partnership. This is especially strong in the Finnish context, as there is huge need for external funding and funding will surely be brought into discussion in the beginning of any cooperation. This will naturally affect situations that would bring monetary benefits only later and hence the importance of funding dedicated for partnership development is strengthened, because partnership creation does not happen quickly, but needs both planning and strategy on one's own end and discussions and negotiations with the partner before the concrete actions can be taken. Furthermore, it is the concrete actions, which bring the results in the higher education sector, which is primarily not

measured by financial outcome, for instance. The funding related knowledge is linked to the relational assets, as one important point is well-working contacts with different funders, but in addition to that there is specifically need for expertise and understanding on the funding itself and how it suits and can be utilized in the case university.

The knowledge connected to partnering of the case university can be also viewed through the categorization used by Hautala (2008, 133-135), who studied the knowledge of research groups in a Finnish university. Social knowledge is both individual and collective and is referred to in this research material both regarding internal connections and external connections. Partnering means building up connections both in terms of individuals and collectively and the social knowledge is built through it. The knowledge through the existing external partners and also internally the connections could be said to create social knowledge, which then supports the partnering itself. It could also be argued that social knowledge is built as an outcome of partnering. Procedural knowledge, the rules of academic research, was referred to as an element affecting also partner search and the outcomes of cooperation and the different cooperation formats and models like cotutelle and doctoral double degrees. Procedural knowledge in partnering seems like to include especially funding-relating knowledge like applications and project management which are significant aspect currently.

Academic knowledge was referred to also in this material and the expertise of others, both individuals and at the group level, looks like supporting the institutional approach in partnering. Situational knowledge in terms on partnering could be said to be twofold regarding partnering. Serendipity was referred to in many conjunctions. This research suggests that situational knowledge, ability to utilize the potential of the moment (Hautala 2008, 133-135) is connected to it. The research outlines that many contacts and long-term fruitful cooperation relations were a result of serendipity, which then suggest the high situational knowledge of staff as they have been able to utilize the moment for benefit. Cultural knowledge, which Hautala (2008, 133-135) outlines to be very close to situational knowledge, was explicitly referred to in the material regarding project consortia and the very different views to deadlines, replies to messages and tacit rules of who can contact whom. Implicitly cultural knowledge was referred to

regarding information on potential and existing partners and competitors. It is not only facts and figures, but also cultural aspects and differences, which are valuable to be able to sense and take into account.

When it comes to knowledge sharing, trust (e.g. Annansingh et al. 2016, 1001) and organizational culture (e.g. Serenko & Bontis 2016, 702, McDermott & O'Dell 2001, 84-85) play an important role. In this regard the research findings are twofold: Generally speaking, knowledge sharing and hence cooperation between schools and groups has been increasing. However, there is still both hesitance in sharing one's contacts or knowledge and also lack of understanding, what is the aim regarding strategic partnerships and its impact on the individual's undertakings. Some people are reluctant in disclosing their cooperation partners because they are afraid that a formal partnership would somehow harm the ongoing person-to-person cooperation and this challenge looks like being on the way to wider knowledge sharing. The question is about trust and intrinsic motivation and this could perhaps be gradually created by communicating on the positive outcomes and developing concrete tools to be used by individual researchers and groups in terms of institutional strategic partnerships.

The findings show several well-working formal information sharing tools like e-mail lists, newsletters, intranet, regular meetings. The weight of informal sharing channels is also outlined in this research and are complementary to formal ones like also Foss et al. (2010, 458, 469, 471) have outlined. Ramjaevon and Rowley (2017, 371-374) emphasize the significance of good knowledge sharing infrastructure, and in this regard the main infrastructure comprises of e-mail lists, newsletters and intranet. Out of these, intranet seems to be the least read one and coverage of e-mail lists and newsletters looks like being wider. Regular meetings belong to the group of widely used and well-working sharing tools. However, it seems that the culture of having regular meetings is not fully organization wide and international cooperation and partnering is not regularly in the agenda. Based on the finding that there is no organization wide communication on international visitors, the organization might benefit of having a mailing list and intra page on international visitors as well as of explicitly knowing, what data can be derived from each information system. This might

also have a side effect on increasing understanding of the importance to add the requested information to the systems for the overall benefit.

The case organization has no incentives in place for boosting knowledge sharing and the earlier research has shown that they might even have negative influence on informal sharing among those who have intrinsic driver for sharing (Foss et al. 2010, 469-471). The influence of organizational culture to knowledge sharing has been outlined by several researchers (e.g. Serenko & Bontis 2016, 702, McDermott & O'Dell 2001, 84-85) and the case organization's culture towards knowledge sharing looks like being strengthening. Hence, instead of putting any formal incentives on place, support to the growing culture towards knowledge sharing seems to be a recommended one. Communicating on good examples and on cross-departmental and cross-faculty cooperation and highlighting the influence of knowledge sharing persons might work to strengthen the already positively developing culture. Additionally, the formal presentation described above might boost the very important informal sharing models.

Finally, different organization levels utilize both different kind of information and in different detail levels. For the top management sharing it might be enough to follow the partnering development on a relatively abstract level, but for the actual cooperating persons detailed and concrete information is the most useful. As Annansingh et al. (2016, 1001) outline, effective knowledge sharing contributes to achieving better results and if knowledge sharing practices are not properly planes, this might lead to unwanted consequences like lack of trust and cooperation and even threats. It seems that there are existing well-working knowledge sharing practices, which could be utilized more effectively in the international partnering target.

To answer the second research sub-question: ***"What kind of knowledge is involved in partnering and how is it shared?"***

The knowledge supporting and used for partnering comprises of internal actor's expertise and focus areas, experience of partnering and cooperation formats, international networks and contacts as well as of profound knowledge of funding related to human assets and of group and program level focus areas, plans and

external partners as well as on potential partners and competitors related to structural assets.

Knowledge sharing related to partnering is done both via formal (mailing lists, newsletters, intranet, meetings) and informal channels. Formal and informal channels complement each other and the formal channels can serve as boosting informal sharing and communication, which seems to be rising and is heavily dependent on the organisational culture. Hence, strengthening the already growing sharing and cooperation culture is the key, and formal sharing channels, examples of supervisors and the management and showcases of the positive results based on sharing culture seem to be suitable for this purpose.

As Burt (2013, 529, 2015, 149-150, 160) has outlined, people are often focused on working with and sharing information within their own group and high cohesion inside a group strengthens the structural holes between groups. Brokering links the disconnected entities (Meyer 2010, 118) and is discussed in the next chapter.

7.3. Knowledge brokering perspectives in partnering

This study outlines that there are several structural holes related to the partnering aims of the case university. In this research the context is international partnering, and the focus was to find out, which are the internal structural holes regarding it. Burt et al. (2013, 529) have stated that the actors in different sides of the structural hole can know each other, but they do not work together and focus on working and sharing information inside their own group. This looks like being the case in terms of the human assets related knowledge gap that people inside the organisation do not know about each other's expertise and contacts, but however, know that the others exists. This seems to be the case regarding internal relations, too, as people inside a department certainly know about each other, but still the partnership related issues are typically handled separately regarding education and research. It could simply be that people haven't thought about that joining the forces of other groups and units could bring added value. On the other hand, it can be a result of the high cohesion inside the group, which has

been noticed by Burt to strengthen the structural hole. As Burt (2015, 149-150, 160) continues, the groups will most likely be working with different knowledge and the above diminishes the likelihood of brokerage even though they could get new knowledge from each other. It is typical for a university organisation, that a group is focused on working within its members, and the group or degree program level plans are not internally public, which crates another structural hole. However, people tend to both think and act in the same way inside than between groups (Burt 2004, 349-351) and this knowledge asymmetry paves way for brokering.

As discussed above, the structural holes in terms of international partnering are related to the missing internal connections and knowledge, ie. internal structural holes. It is suggested that these missing linkages are able to be found with the help of viewing the partnering issue from the intangible assets view. Saarela et al. (2014, 334) have outlined the importance to negotiate, agree and understand the roles different actors have in knowledge exchange. Based on this research, this seems to be a topical issue in the case university, which is taking the next steps in its partnering approach.

Knowledge brokers are by Long et al. (2013, 10) valuable, because they create new ideas and enhance activities and coherence of networks, and broker can be either an individual or an organisation (Meyer 2010, 118). This study shows both internal and external individuals and internal and external organisations, who act as brokers regarding the case university's international partnering. Based on this study also a temporary organisation like a project works as a broker, combining actors who wouldn't otherwise be connected (Meyer 2010, 118). Additionally, the scientific community and linkages to it are utmost important and hence supervisors have the significant role in linking the junior researchers to the communities. This seems to be embedded in the senior researcher's roles, but based on this material, exchange of experiences seem to be largely missing and furthermore, the good practises do not cover the whole organisation.

Long et al. (2013, 1-2, 10) point out that facilitation and coordination of activities, moving information among persons and groups belong to a broker's task. Considering the task of the case university's support services, the support services have implicitly

the brokering role within their tasks. Knowledge brokering brings value by supporting managed transfer of knowledge, increasing cooperation between persons from both sides of the hole and by enhancing efficiency by bringing ideas from one group to another. (Long et al. 2013, 12). In this research, this was the case especially regarding the research platforms as an internal broker and regarding individuals, whose tasks include the brokering role or who has the embedded feature of combining different actors and creating new possibilities. It could be argued based on this material, that the value of brokers as a whole has only partially been recognized and hence it is suggested that brokering could be included in supervisor's tasks as a long-term goal.

It has been discussed in earlier research that brokering has its backside, too. It can become costly and brokers can get loaded by all the bridging, conflict-solving, access-building and tie-creation tasks (Long et al. 2013, 1-2, 10). Hence this study suggests that there could be part-time brokering role included in at least supervisor's task, but also more largely among staff members. This would not take much time of an individual but has a potential in bringing value, e.g. contacts, projects, funding to a colleague. To be able to utilize an upcoming situation, it is needed that the plans as well as organisations, with which a unit wishes to create contacts, are known. Hence the above-mentioned structural hole in terms of internal visibility of plans is essential to be solved. It has been outlined in earlier research that ties, communication and trust is easier to build between close actors than distant ones (Long et al. 2013, 1-2, 10). This is suggested to support the role of supervisors in bridging different actors, as supervisors are anyway in more frequent contact. Additional supporting point is the professional hierarchy, referred to by Currie and White (2012, 1333, 1353-1355), too and outline the importance of peer-to-peer brokering.

When viewing the relationship of brokering to both social capital and intellectual capital, this research suggests that they are interlinked in the partnering process. Like Nahapiet and Ghoshal argue, social capital influences on the capability to integrate knowledge for the generation of intellectual capital. Social capital affects the situations, in which knowledge is exchanged and combined. Social capital is mutually possessed by the actors and hence joint resource. (Nahapiet & Ghoshal, 1998, 250-251, 256, 260.) Kianto and Waajakoski (2010, 12) argue that social capital can be viewed as

"bonding", which means creation of close ties inside an organisation or "bridging", which means linking disconnected entities and both types look like being needed in activities inside and between organisations.

Based on the above, this research suggests that by brokering new contacts are built, which in turn creates new social capital via extended connections, possibilities and combinations (e.g. a person introduces a researcher from a neighbouring internal unit to a researcher from an external partner and after that these connected persons join their expertise and build double degree cooperation). The new connections and combinations allow new intellectual capital to be created (e.g. new knowledge on how to combine requirement of both parties' internal rules and national legislation). If this new intellectual capital is not shared with other units (e.g. the knowledge on degree structures and national requirements between other degree programs), there is a new structural hole created (other programs do not know about the new cooperation structures and factors affecting e.g. degree structures and cannot utilize this knowledge in their cooperation intentions), which can be overcome with the help of a broker, who connects the persons having existing cooperation and persons planning cooperation with the same institution. Again, as a result of this brokering new social capital in created inside the institution. The figure 9 below describes the suggested linkage.
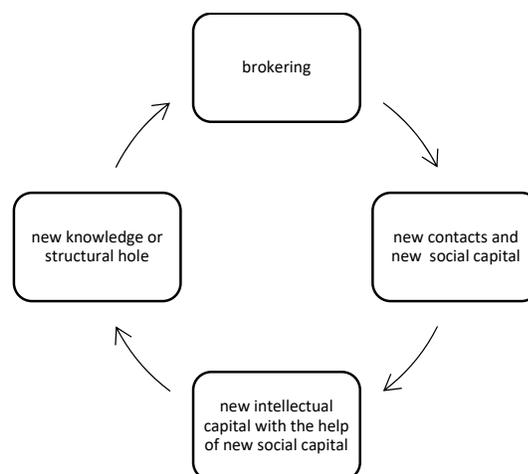
Figure 9   The suggested relationship of brokering, social capital, intellectual capital and structural holes in partnering.

To answer the third research sub-question: "*What are the knowledge gaps and knowledge brokers in partnering?*"

The main knowledge gaps in partnering seem to include lack of personal contacts between top levels of the desired institution and non-visibility of individual's expertise, experience and contacts when it comes to human assets. In regard to structural assets, the main knowledge gaps seem to comprise of lack of knowledge regarding partners, projects networks, consortia due to underutilized data systems. Also, the partnering plans of groups and programmes are not transparent organisation wide and there seems to be lack of information in what is the impact of institutional partners to the individual level activities. Regarding relational assets the internal relations have structural holes as research and education cooperation are mostly planned and actions taken separately, and there looks like being a gap between different degree programs, too.

In this research, there were identified four different types of brokers in international partnering. Internal individuals, who broker knowledge and contacts comprise supervisors, individuals, whose task is to act like a bridge builder as well as individuals, which by nature are prosocial and connect different actors. Regarding individuals, who are not the case university's internal actors, the group of brokers include such as project managers, visiting researchers and one's peers in scientific networks. When it comes to external organisations, who work as knowledge brokers, they include e.g. scientific networks, companies, projects and additionally social media like Twitter works as platform or forum for brokering. The internal organisations acting like brokers include such as research platforms, management groups, projects having several internal units and also support services which work for the whole organisation.

8.   CONCLUSIONS

This final chapter of the research provides a short summary of the research results and discusses the theoretical contributions as well as methodological and practical implications. The last chapter discusses limitations of the research and makes proposals for further research based on the findings and results of this research.

8.1.   Summary of the research results

The main research question of this thesis is: *"What kind of intellectual capital, knowledge sharing and knowledge brokering support international partnering of a university?*

This research indicates that international partnering of a university is supported by multiple components of intellectual capital, which are interlinked. Regarding human assets, partnering is supported by transparently shared and actively increased expertise, experiences and contacts of academic and support staff, by exchanges abroad in all levels and by linking junior researchers to networks and communities by supervisors, which all contribute to contact-building. In terms of structural assets, partnering is supported by transparently shared group and departmental level plans and targets internally and systematic usage of partnering related data from internal and external data systems to support strategic planning, by diminishing of barriers to internal cooperation and knowledge sharing by internal structures and culture, by incorporating partnering in regular planning and utilizing and sharing experience on practises regarding different cooperation modes with foreign partners. When it comes to relational assets, partnering, which practically means creation of structural capital, can be supported by incorporation of both research and education perspectives in partnering planning, by cooperation of different degree programs and units as well as inside research platforms, by involving many organisation levels to the activities with partners and ensuring funding to support the partner-related activities, by active participation in selected networks, by limiting the number of partnerships to ensure

time and quality and by utilizing different personal and project level cooperation modes to build contacts with the desired institutions.

Knowledge sharing related to the above intangible assets supports partnering in the case university, especially related to expertise of individuals, partnering experience and focus areas of groups and programs, but also related to international networks and funding as well as to potential partners and competitors. The weight of informal channels in sharing is big and formal channels like mailing lists, newsletter, intranet and meetings are a tool to complement and boost informal sharing by introducing new contacts. Examples by management and supervisors as well as showcases of positive results look like being the key in supporting the already growing sharing and cooperation culture.

This study identified structural holes or knowledge gaps in more strategic partnering with academic institutions, which could be overcome by enlarging the already existing brokering and introducing a part-time broker model throughout the organisation. Regarding human assets the main knowledge gaps comprise the missing personal contacts in the top level and non-visibility of individual level expertise and contacts with the desired institutions. In terms of structural assets, the gaps are formed due to underutilized data from available data systems as well as the impact of strategic partners on the level of individuals and groups. Regarding relational assets the structural holes are born when research and education partners and cooperation are not planned and activities undertaken together, but separately, and the same is regarding the different degree programs, too. However, this research found already existing brokering and both internal and external persons as well as internal and external organisations who act as brokers and hence link and connect persons and units together. Supervisors are essential in linking the junior generation to the scientific community and project managers possess huge possibilities for connecting both internally and between external organisations. Some persons have brokering embedded in their way of working and learning from them creates vast opportunities. Visiting researchers, both incoming and outgoing, seem to be valuable in the brokering sense, but are partly underutilized. Externally, selected networks, social media, companies and projects and internally research platforms, management meetings at

different levels and centralised support services seem to work like brokers, which support the university in its partnering aims.

8.2. Theoretical contributions

This study examined international partnering of a university from the intangible assets, knowledge sharing and knowledge brokering perspectives. The intangible assets view to partnering and the challenges and best practises viewpoint look like giving new perspectives to the phenomenon of international partnering. This research suggests that intangible assets are strongly interlinked and the creation of partnerships with other academic institutions, ie. creation of relational assets, is supported by other relational assets, but also by human and structural assets. It seems that it could be argued that creation of relational assets requires either human or structural assets or both. Hence, this study contributes to the theory of intangible capital in the university sector by proposing the interconnectedness of the components of intangible assets when viewed from the building of relational assets of an institution. The weight of different components is suggested to vary depending on each case, but successful creation of relational assets is suggested to be dependent on other intangibles, their usage and relatedness.

Knowledge brokering is not a new aspect in the university sector, but this study contributes to the brokering theory by suggesting that in the context of international partnering of a university, brokering is linked in addition to the generation of social capital, also to the generation of intellectual capital, which in turn looks like rising the need for new brokering. This creates a cycle as described in the figure 9 above. On the top of that, this study suggests that examining partnering from the intangible assets viewpoints creates a new sight to knowledge brokering and structural holes, because the intangible assets view seems to show the interconnectedness of different intangibles and hence the places or issues which could be supported by knowledge brokering.

8.3. Methodological implications

This research provided a possibility to learn in all of its phases. Below a few main points about making a qualitative case study of this kind are discussed. First of all, it was beneficial to have the test research a few months before this research was started. This was especially helpful regarding the interviews. The interviews during the test phase contributed to understand, which questions work well, which should be modified or not to be taken with at all. In addition, the answers received supported the author to develop the research setting and also the interview questions.

Secondly, the double role of the author caused some challenges, as the theme of the research is closely related to the author's work, and thus the author has views and opinions to the theme by herself. However, in this research the author's role was to be a researcher, and examine and analyse the material solely objectively. The positive affect of the double role is that the theme as a whole is familiar to the author, what hence provides strong background knowledge of the theme.

Thirdly, group interviews were found out to be productive, because the interviewees built their answers on the top of the other's answers, and could hence provide thorough viewpoints. As the interviewees answered in turns, the time before one's own turn looked like being beneficial allowing some more time for thinking. However, some challenges also occurred as people gave long, emotional answers from time to time and the content was not always focusing on answering the question, though related to the theme. Hence, during the analysis it was needed to keep the focus on the research questions and put the rich material on themes loosely related to the research theme aside for further research purposes.

8.4. Practical implications

This research produced many practical implications and they are discussed below. First of all, serendipity seems to have a really big role in partnering. Hence, it is worth encouraging each and everyone in the university to build international relations, attend

conferences and go for research exchange to give room for the possibilities. However, it is worth making all decisions based on the strategy and plans to ensure that all activities lead to the same direction as resources are limited. In the individual level the strategy could be the personal career path, in the group, department and individual levels the strategy and action plans. Tools and means can vary and different actions lead to the same target, but without having the strategic target, focus of actions will be hidden and the general target will be hard or impossible to reach. Important is to plan activities but get the most out of serendipity and different bottom-up based contacts and activities. One valuable point is that the number of partners should not be too high in each level to ensure that the partner relations are able to be taken care of in a due way.

Regarding incoming visitors, it would be beneficial to inform about them in broader terms to allow room for serendipity and enable planned activities. Even though many activities are discipline-bound, connection building to staff members of the desired institution is anyway beneficial and the incoming visitor could undertake a part-time broker role to open paths and possibilities. Related to this, the new recruitments always bring their personal networks and connections to the new organisation. On the top of this, they have experience of the practises and processes of the previous employers, thus it would be worth having a discussion about the experiences and best practises of other organisations for learning and benchmarking purposes.

Universities operations are international by nature. This does not mean that international cooperation and activities, partner relations and partnership formation are not needed to be discussed, planned and evaluated, but on the contrary. Essential point is that partnering is handled together with other activities, targets, action plans and not separately, and international activities are a regular part of agendas in the group, department and institutional levels. In this conjunction, tight cooperation and regular discussions between the heads of departments with the heads of degree programmes is highly recommended to ensure that research and education viewpoints are taken into account. It can well be that the best research partners are not the most fitting educational partners, but there might come up common agendas if these viewpoints are handled together.

Different good practices and examples which have enabled institutional, departmental or program level cooperation are worth being communicated and brought up transparently. These include cooperation e.g. like double degree programs, cotutelle cooperation, teacher mobility and other. Closely related to this, the support functions and expertise of support services regarding international partnering are also worth being listed explicitly to allow building a general picture in an easy way instead of digging out the information from different units. A dedicated, institution wide partnership support function can support the cumulation of knowledge and experiences and help e.g. in conceptualizing meetings. In addition, each partnership needs a champion, a contact or responsible person or a key account manager. To ensure wide contacts, it is worth engaging persons from different organizational level from the very beginning.

The relation of group or department or school level targets and ambitions regarding partnering seems to be twofold: On one hand, the necessity for institutional level partnering is recognised and the selections known, but on the other hand, there is lack of concrete tools at the individual and group levels how to utilize them and also some fears that official institutional partnership will make the existing links and cooperation more complicated. Thus, more communication on the partnering purposes and concrete activities within them are still needed to complement the existing knowledge regarding the development of institutional partnerships. Evidently a part of the case university's staff is very proactive and also prosocial. To meet the challenge of sharing good examples and practises, it could be beneficial to make different cases of partnership building more visible internally.

Additionally, in partnering an important viewpoint is the so called "chemistry" between individuals, which is linked to personal qualities. The big question is about developing institutional partnerships, but it is never an organisation, who makes the contacts or activities, but always a person or persons, and hence it is utmost significant that cooperating individuals are able to work together, build trust and even friendship with each other. This can be followed with the speculations that it might be wise to link multiple persons from both sides of the partnership together to ensure that if some persons do not match well together, there are others who can take the task and also

to ensure that contacts are not on either side dependant on single persons. This also means that it is probably wise to engage to the cooperation many organisational layers from the very beginning.

When it comes to internal knowledge sharing or knowledge transfer, there looks like being quest for knowing more on the expertise and focus areas of other research groups to be able to utilize the in-house knowledge and for finding the interfaces and joint development targets. It seems that separate events are not the best option, hence it might be worth utilizing the existing meetings in different levels (research groups, laboratories, departments) for this. Reserving limited timeslot for regular meetings for updates or introductions of other peer unit, might serve for this purpose and also as a consequence boost informal knowledge sharing and discussions. All in all, regular meetings in different units are highly useful also for the purpose of strengthening discussions and information sharing and supporting the organizational culture of transparency and cooperation.

One valuable viewpoint is that partnering and partnership development is one task among other tasks and for supervisors and heads of laboratory/group, department or degree programme, this is recommended to be included when speaking about allocation of individual's working time to different tasks. Additionally, the case university would benefit of promoting the recently established key account model and the role of key account managers as knowledge brokers between the case university and the external partner, but also inside the case university. On the top of this, each individual could act as a part-time broker and utilizing the occasions and opportunities whenever they come up provided that the plans and desired target organisations etc. are known. Without knowing about the goals, there is no possibility to utilize the upcoming situations. It also might not be a bad idea to nominate an institution-wide team comprising of representatives of schools and support services which would join the efforts and jointly plan and execute activities and exchange good practices regarding international partnership formation based on the plans by schools and departments. This group would explicitly have the brokering role and there would most probably be benefits gained by having dedicated persons to support the work of the deans. Additionally, it is worth to have the brokering idea gradually included in the tasks and

expectations of senior staff, especially supervisors and heads of research groups and degree programmes.

Last but not least: data. First of all, the case university and its different organizational levels would benefit of explicitly disclosing what kind of data is available in terms of existing partners both from internal and external databases. In addition, it is worth listing transparently who from the support services will assist regarding what kind of data and information and support in international partnering. The purpose is to simply increase the awareness of different data sources to support planned partnering and international cooperation. Data from systems is never complete, but valuable as background information to support decision making and action planning. In addition, well-done background work can be a tool to assure partners about good quality and systematic way of working. A partner dashboard might also be useful combining data from different systems to build a big picture of various cooperation with the partner.

Regarding other than intangible assets, funding and research infrastructure have also important roles. With funding it is possible to steer the activities towards the desired targets with desired partners and hence it looks like that it is beneficial to continue the internal funding which is meant for supporting the development of strategic partnerships. However, due to the cocid-19 epidemic and also the fact that partnering is a time-consuming issue, it seems to be wise to reconsider the time schedule regarding expected outcomes. Additional point is that jointly applied and received funding works well for bonding together the consortium members.

In addition, physical research infrastructure, laboratories and equipment, are also a good bonding tool and a way to lead the cooperation with a partner to a more institutionalized form. This applies both to bilateral and network cooperation.

8.5. Limitations and further research

This research was conducted with the exclusions and definitions outlined above and should there have been other focus or other theoretical background based on which

the empirical material was analysed, the outcome could have had other tones. Naturally, by composing the interview questions in another way, other viewpoints could have been revealed.

One limitation concerns the interviews. The initial plan was to gather the empirical data by having individual and group interviews face-to-face in the campus. However, the epidemic caused by the covid-19 changed the plans and all the interviews were held online using a video meeting tool. There are no possibilities to compare the outcome of the online interviews to face-to-face interviews in the scope of this study, but it is possible, that it affected the content. However, all the interviewees have been used to utilizing videoconferencing tools, so in this regard, there were no challenges. However, the interviews were forced to be held without the video connection using only the voice due to challenges in recording. The recording of one of the first interviews failed caused by the very large size of the recording file. After that the author was too afraid of losing the following interviews, too, and hence the participants met only by voice after saying hello to everybody in the beginning. On one hand it is possible that by seeing each other's face and reaction, there could have been something to be added to the analysis and on the other hand that by seeing each other, the interviewees in group interviews might have been able to co-create something more together.

Another limitation concerns also the interviews, namely the group of interviewees. There might have been additional viewpoints brought up or some points might have been emphasized more or less, if the group of interviewed persons would have been another one. The interview material is rich and multisided, and the interviewees represent different positions and the voice of all schools by researchers from doctoral students to professor levels are included, management views from deans and the rector and support services by different experts from different functions are included, but some additional aspects could have come out with another set of interviewees.

Regarding future research it would be most interesting to conduct a research, which focuses on the partners of the case organization and on their intellectual capital, knowledge needs, knowledge sharing and knowledge brokering. That would definitely bring extra viewpoints to complement this study. In addition, it would be highly tempting

to make a research among partners of a formal network and find out, how the themes of this research are shown inside a network and are there differences between old and new members if such exist.

Additionally, it would be very compelling to compare what kind of similarities and differences exist between international and national partnership formation and does the formation of university-industry partnerships differ from the university-university setting used in this research.

The covid-19 pandemic has been ongoing during the whole time of the research. The epidemic has cancelled all physical meetings and conferences, project meetings etc. have all been held online. It would be interesting to study what kind of affects this epidemic has on international partnering of higher education institutions.

Finally, the significance of trust in building and maintaining partner relations was stressed several times. The formation and role of trust in institutional international partner relations would hence be a subject for further studies, too.

9. REFERENCES

Adler, P. S., Kwon, S-W. (2002). ocial Capital: Prospects For a New Concept. *Academy of Management. The Academy of Management Review* 27, pp. 17-40.

Amey, M.J. (2010). Administrative Perspectives on International Partnerships. *New Directions for Higher Education*, no 150, pp. 57-67. *Wiley Periodicals*, Inc.

Andreeva, T., Kianto, A. (2011). Knowledge processes, knowledge-intensity and innovation: a moderated mediation analysis. *Journal of Knowledge Management*, Vol. 15, No 6, 2011, pp. 1016-1034.

Annansingh, F., Howell, K.E., Liu, Shaofeng, Nunes, M.B. (2018). Academics' perception on knowledge sharing in higher education. *International Journal of Educational Management*, Vol. 32, No. 6, pp. 1001-1015.

Anslinger, P., Jenk, J. (2004). Creating successful alliances. *Journal of Business Strategy*, Vol. 25, No. 2, pp. 18-22.

Ayoubi, R.M., Al-Habaibeh, A. (2006). An investigation into international business collaboration in higher education organisations. *International Journal of Educational Management*, Vol. 20, No. 5, pp. 380-396.

Beerkens, E. (2002). International inter-organisational arrangements in higher education: towards a typology. *Tertiary Education and Management* 8, pp. 297-314.

Bejinaru, R. (2017). Knowledge strategies aiming to improve the intellectual capital of universities. Management & Marketing. *Challenges for the Knowledge Society*, Vol. 12, No. 3, pp. 500-523.

Bergenholtz, C. (2011). Knowledge brokering: spanning technological and network boundaries. *European Journal of Innovation Management* 25 January 2011, Vol.14(1), pp.74-92.

Boari, C., Riboldazzi, F. (2014). How knowledge brokers emerge and evolve: The role of actors' behavior. *Research Policy* May 2014, Vol.43(4), pp.683-695.

Bolino, M.C., Grant, A.M. (2016). The Bright Side of Being Prosocial at Work, and the Dark Side, Too: A Review and Agenda for Research on Other-Oriented Motives, Behavior, and Impact in Organizations. *The Academy of Management Annals*, 2016, Vol. 10, No. 1, pp. 599-670.

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision* 36/2, pp. 63-76.

Bontis, N. (1999). Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field. *Int. J. Technology Management*, Vol. 18, Nos. 5/6/7/8.

Boyle, B., McDonnell, A., Mitchell, R., Nicholas, S. (2012). Managing knowledge in internationalizing universities through foreign assignments. *International Journal of Educational Management*, Vol. 26, No. 3, pp. 302-312.

Bratianu, C., Pinzaru, F. (2015). Challenges for the University Intellectual Capital in the Knowledge Economy. *Management Dynamic in the Knowledge Economy* Vol. 3 (2015) no.4, pp. 609-627.

Burley, D., Gram, C., Newman, R., Straker, H., Babies, T. (2011). Leveraging higher education consortia for institutional advancement. *International Journal of Educational Management*, Vol. 26, No 3, pp. 271-283.

Burt, R.S. (1992). Structural Holes: The Social Structure of Competition. Harward University Press, Boston 1995. ISBN 0-674-84372-X.

Burt, R.S. (2004). Structural Holes and Good Ideas. *American Journal of Sociology*, Vol. 110, No. 2, pp. 349-399.

Burt, R.S. (2015). Reinforced Structural Holes. *Social Networks* 43 (2015), 149-161.

Burt, R.S., Kilduff, M., Tasselli, S. (2013). Social Network Analysis: Foundations and Frontier on Advantage. *Annu. Rev. Psychol.* 2013, 64, pp. 527-547.

Chapman, D.W., Pekol, A., Wilson, E. (2014). Cross-border university networks as a development strategy: Lessons from three university networks focused on emerging pandemic threats. *Int Rev Educ* (2014) 60: 619-637. Springer.

Córcoles, Y.R. (2013). Intellectual capital management and reporting in European higher education institutions. *Intangible Capital* 2013 – 9(1): 1-19 – Online ISSN: 1697-9818, pp. 1-19.

Cummings, S., Kiwanuka, S., Gillman, H., Regeer, B. (2019). The future of knowledge brokering: perspectives from a generational framework of knowledge management for international development. *Information Development*, Vo. 35(5), pp. 781-794.

Currie, G., White, L. (2012). Inter-professional barriers and knowledge brokering in an organizational context: The case of healthcare. *Organizational Studies* 33(10), pp. 1333-1361.

Dooley, L., Gubbins, C. (2019). Inter-organisational knowledge networks: synthesizing dialectic tensions of university-industry knowledge discovery. *Journal of Knowledge Management*, pp. 1-23. (in press)

Dufays, F., Huybrechts, B. (2014). Connecting the dots for social value: A review on social networks and social entrepreneurship. Working paper, pp. 1-22. Accepted for publication in the *Journal of Social Entrepreneurship* 5(2), pp. 214-237.

Dyer, J.H., Singh, H. (2001). How to make strategic alliances work. *MIT Sloan Management Review* 2001, pp 37-43.

Edvinsson, L., Sullivan, P. (1996). Developing a model for managing intellectual capital. *European Management Journal*, Vol. 14, No 4, pp. 356-364.

Edwards, J. (2007). Challenges and Opportunities for the Internationalization of Higher Education in the Coming Decade: Planned and Opportunistic Initiatives in American Institutions. *Journal of Studies in International Education*, Vol. 11, No. 3/4, pp. 373-381.

Foss, N.J., Husted, K., Michailova, S. (2010). Governing knowledge sharing in organizations: Levels of analysis, governance mechanisms, and research directions. *Journal of Management Studies* 47:3, pp. 455-482.

Gill, A. (2009). Knowledge management initiatives at a small university. International *Journal of Educational Management*, Vol. 23, No. 7, pp. 604-616.

Grant, R.M., Baden-Fuller, C. (2004). A knowledge-accessing theory of strategic alliances. *Journal of Management Studies*, 41:1, pp. 61-84.

Hahl, O., Kacperczyk, A., Davis, J.P. (2016). Knowledge asymmetry and brokerage: Linking network perception to position in structural holes. *Strategic organisation* 2016, Vol. 14(2), pp. 118-143.

Hautala, J. (2008). Internationalization of knowledge creation at the university. The case of the University of Oulu, Finland. *Proceedings. 2nd Conference on Nordic Innovation Research, December 3-4 2007*, pp. 126-142. Luleå University of Technology.

Hautala, J. (2011). International academic knowledge creation and *ba*. A case study from Finland. *Knowledge Management Research & Practice* (2011) 9, pp. 4-16.

Hirsjärvi, S., Remes, P., Sajavaara, P. (2015). Tutki ja kirjoita. 21. painos. Helsinki: Kustannusosakeyhtiö Tammi.

Horta, H., Patrício, M.T. (2016). Setting-up and international science partnership program: A case study between Portuguese and US research universities. *Technological Forecasting & Social Change* 113 (2016), pp. 230-239.

Ilieva, R., Beck, K., Waterstone, B. (2014). Towards sustainable internationalization of higher education. *High Educ* (2014), 68: 875-889.

Inkinen, H., Kianto, A., Vanhala, M., Ritala, P. (2017). Structure of intellectual capital – an international comparison. *Accounting, Auditing & Accountability Journal*, Vol. 30, No. 5, pp. 1160-1183.

Joia, L.A., Malheiros, R. (2009). Strategic alliances and the intellectual capital of firms. *Journal of Intellectual Capital*, Vol. 10, No 4, pp. 539-558.

Kianto, A., Ritala, P., Vanhala, M., Hussinki, H. (2019). Reflections on the criteria for the sound measurement of intellectual capital: A knowledge-based perspective. *Critical Perspectives on Accounting* xxx (2019), pp. 1-15. Article in press. https://doi.org/10.1016/j.cpa.2018.05.002

Kianto, A., Waajakoski, J. (2010). Linking social capital to organizational growth. *Knowledge Management Research & Practice* (2010) 8, pp, 4-14.

Kinser, K., Green, M.F., (2009). The Power of Partnerships: A Transatlantic Dialogue. American Council on Education.

Kristensen, K.H., Karlsen J.E. (2018). Strategies for internationalisation at technical universities in the Nordic countries. *Tertiary Education and Management*, 2018, Vol. 24, No. 1, pp. 19-33.

Lee, H.Y., Roth, G.L. (2009). A Conceptual Framework for Examining Knowledge Management in Higher Education Contexts. *New Horizons in Adult Education & Human Resource Development*, Vol.23 (4), p.22-37.

Long, J.C., Cunningham, F.C., Braithwaite, J. (2013). Bridges, brokers and boundary spanners in collaborative networks: a systematic review. *Health Services Research* 2013, 13:158, pp. 1-13.

Louime, C., Jones, J.V., Jones, T-A. (2011). Developing research-based partnerships: Florida A&M University's U.S.-Brazil cross-cultural initiative. In Sutton, S., & Obst, D. (editors) Developing Strategic International Partnerships. ISBN 978-0-87206-344-0. New York, The Institute of International Education.

Lönnqvist, A., Kujansivu, P., Antola, J. (2005). Aineettoman pääoman johtaminen. Tampere: Aavaranta Oy.

Ma, J., Montgomery, C. (2019). Constructing Sustainable International Partnerships in Higher Education: Linking the Strategic and Contingent Through Interpersonal Relationships in the United Kingdom and China. *Journal of Studies in International Education*, pp. 1-16.

Maag, S., Alexander, T.J., Kase, R., Hoffmann, S. (2018). Indicators for measuring the contributions of individual knowledge brokers. *Environmental Science and Policy* November 2018, Vol.89, pp.1-9.

Martin, J.S., Marion, R. (2005). Higher education leadership roles in knowledge processing. *The Learning Organization*, Vol. 12, No. 2,2005, pp. 140-151.

McDermott, R., O'Dell, C. (2001). Overcoming cultural barriers to sharing knowledge. *Journal of Knowledge Management*, Vol. 5, No 1, pp. 76-85.

Meier, M. (2011). Knowledge Management in Strategic Alliances: A Review of Empirical Evidence. *International Journal of Management Reviews*, Vol. 13, 1-23.

Meyer, M. (2010). The Rise of the Knowledge Broker. *Science Communication* 21 (1), pp. 118-127.

Minedu (2017). Yhteistyössä maailman parasta. Korkeakoulutuksen ja tutkimuksen kansainvälisyyden edistämisen linjaukset 2017–2025. Opetus- ja kulttuuriministeriön julkaisuja 2017:11. Available at: http://urn.fi/URN:ISBN:978-952-263-457-3 [accessed 2 November 2019].

Nahapiet, J., Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. The Academy of Management Review, Apr 1998, 23, 2, pp. 242-266.

Nonaka, I., Toyama, R., Konno, N. (2000). SECI, *ba* and leadership: a unified mode of dynamic knowledge creation. *Long Range Planning* 33 (2000), pp. 5-34.

Ramírez, Y., Gordillo, S., (2014). Recognition and measurement of intellectual capital in Spanish Universities. *Journal of Intellectual Capital*, Vol. 15, No. 1, pp. 173-188.

Ramjaevon, P.V., Rowley, J. (2017). Knowledge management in higher education institutions: enablers and barriers in Mauritius. *The Learning Organization*, Vol. 24, No. 5, pp. 366-377.

Ramos-Rodríguez, A-R., Medina-Garrido, J-A., Lorenzo-Gómez, J-D., Ruiz-Navarro, J. (2010). What you know or who you know? The role of intellectual and social capital in opportunity recognition. *International Small Business Journal* 28(6), pp. 566-582.

Rodway, J. (2015). Connecting the dots: Understanding the flow of research knowledge within a research brokering network. *Education Policy Analysis Archives*, 23(123), pp. 1-27.

Roos, G., Roos, J. (1997). Measuring your company's intellectual capital. *Long Range Planning*, Vol. 30, No. 3, pp. 413-426.

Saaranen-Kauppinen, A., Puusniekka, A. (2006). KvaliMOTV - Menetelmäopetuksen tietovaranto. Tampere: Yhteiskuntatieteellinen tietoarkisto. https://www.fsd.tuni.fi/menetelmaopetus/. (Accessed 18.5.2020.)

Saarela, S-R., Söderman, T., Lyytimäki, J. (2014). Knowledge brokerage context factors – What matters in knowledge exchange in impact assessment? *Environmental Science & Policy* 51 (2015) 325-337.

Secundo, G., Margherita, A., Elia, G., Passiante, G. (2010). Intangible assets in higher education and research: mission, performance or both? *Journal of Intellectual Capital*, Vol. 11, No. 2, pp. 140-157.

Semali, L.M., Baker, R., Freer, R. (2013). Multi-Institutional Partnerships for Higher Education in Africa: A Case Study of Assumptions on International Academic Collaboration. *International Journal of Higher Education*, Vol. 2, No. 2, pp. 53-66.

Serenko, A., Bontis, N. (2016). Negotiate, reciprocate, or cooperate? The impact of exchange modes on inter-employee knowledge sharing. *Journal of Knowledge Management*, Vol. 20, No. 4, pp. 687-712.

Siadat, S.A., Hoveida, R., Abbaszahed, M., Moghtadaie, L. (2012). Knowledge creation in universities and some related factors. *Journal of Management Development*, vol. 31, No. 8, pp. 845-872.

Siboni, B., Nardo, M.T., Sangiorgi, D. (2013). Italian state university contemporary performance plans: and intellectual capital focus? *Journal of Intellectual Capital*, Vol. 14, No. 3, pp. 414-430.

Stea, D., Pedersen, T. (2017). Not all brokers are alike: Creative implications of brokering networks in different work functions. *Human relations* 2017, Vol. 70(6), pp. 668-693.

Sunalai, S. & Beyerlein, M. (2015). Exploring knowledge management in higher education institutions: Processed, influences, and outcomes. *Academy of Educational Leadership Journal*; Arden Vol. 19, Iss. 3, pp. 289-308.

Tuomi, J., Sarajärvi, A. (2018). Laadullinen tutkimus ja sisällönanalyysi. Uudistettu laitos. Helsinki: Kustannusosakeyhtiö Tammi. E-book.

Universities Act (2009). https://www.finlex.fi/fi/laki/kaannokset/2009/en20090558.pdf. Accessed 5 May 2020.

Urquhart, R., Porter, G.A., Grunfeld, E. (2011). Reflections on knowledge brokering within a multidisciplinary research team. *The Journal of continuing education in the health professions* 2011, Vol.31(4), pp.283-90.

Veltri, S., Mastroleo, G., Schaffhauser-Linzatti, M. (2014). Measuring intellectual capital in the university sector using a fuzzy logic expert system. *Knowledge Management Research & Practice* (2014) 12, 175-192.

Viedma Marti, J.M. (2004). Social capital benchmarking system. Profiting from social capital when building network organizations. *Journal of Intellectual Capital* Vol. 5, No. 3, pp. 426-442.

Ward, V., House, A., Hamer, S. (2009). Knowledge Brokering: The missing link in the evidence to action chain? *Evid Policy*. 2009 August, 5(3), pp. 267–279.

Wihlborg, M., Robson, S. (2018). Internationalisation of higher education: drivers, rationales, priorities, values and impacts. *European Journal of Higher Education*, 2018, Vol. 8, No. 1, pp. 8-18.

Appendix I. Interview questions

Theme: Internationalisation and partner relations of universities

- What does internationalisation mean to you? How is it reflected in your job?
- What are the reasons for internationalisation? What kind of targets are set for internationalisation?
- How is internationalisation managed and who is leading/managing it?
- What does partnering and strategic partnership mean to you? What is the reason for building international networks, partnerships or projects?
- What does the formation of strategic partnerships require?
- How is the formation of partner relations being managed and what is the basis for developing relationships?
- How is internationalisation encouraged at present and how should it to your mind be encouraged?
- What kind of prerequisites or barriers there are for international cooperation or partnering? In which connections are you representing the organisation and in which yourself as an individual actor?

Theme: Good practises and experiences in networking and international cooperation relations

- How has cooperation with different partners begun? What kind of experience do you have?
- Please tell about a successful process, in which the cooperation relationship was created. What was essential in it?
- If you have experience that a cooperation was about to be created and started, but did not eventually succeed, what was the reason behind it? What should have been done in another way?
- Who and with whom does the planning of international activities and partnering?
- What is needed to enlarge cooperation from personal level to broader cooperation covering more than your own circle of acquaintances or unit?
- What is the significance of personal contacts?
- Are there some activities, cooperation or good practices, which are not visible or known widely enough?

Theme: Knowledge and relationship brokering

- Whom and how have you helped or supported in internationalization or in partnership creation? What kind of knowledge or contacts have you passed on?
- From whom have you received help or support to partner relations? What kind of knowledge or contacts have been passed on to you?
- How is international cooperation in research and in education discussed and developed together?
- Which are the forums in which international relations, partnerships and networks are discussed and knowledge & experience shared?

- Who are the ones via whom international affairs are proceeded (brokers, gate openers)?
- Whom have you noticed to act actively as a broker (of knowledge or relationships)?
- What kind of support, help or hints are the most valuable for you?
- What kind of rules or changes would you like to have e.g. for building or development of cooperation?
- How could networking be supported by different internal practices or roles?
- What kind of expectations do you have towards the management, colleagues and support services?

Theme: Knowledge needs and sharing

- What kind of knowledge is needed of international relations and partners? Where is the knowledge? Is something missing?
- Do you know who is working with whom and with which partners?
- What is working well in knowledge sharing and what are the challenges in the information flow?
- How do LUT own practices, incentives and indicators support or harm the information flow?
- Who and in which way are informed of guests coming to LUT?

Is there something you would like to add?

Whom do you recommend to interview?