Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Economics and Management
Department of International Business

Lena Kolomainen Brandal

Intellectual capital disclosure from the users` perspective: the case of Higher Education Institution in Norway

Master's thesis in International Business and Marketing
Supervisor: Elena Panteleeva
December 2021

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Abstract

With the rise of the knowledge-based economy, knowledge has been recognized as a key driver in the value creation and economic growth. Nowadays, organizations are more reliant on their intellectual assets than the physical inputs or natural resources. The topic of intellectual capital (IC) is gaining increased attention in the academic world, particularly in the context of higher educational sector, where knowledge is the main input and output.

This thesis aims to shed a new light on the topic of intellectual capital disclosure (ICD) by exploring the role of ICD, within one of the Norwegian universities, and considered from the perspectives of three groups of users. The groups of users chosen in this thesis are students, employees, and partners that is considered to be relevant, as they are capable to provide internal and external user perspectives at the subject under investigation.

In order to tackle the research problem this study has adopted a qualitative research strategy. Further, semi-structured interviews were conducted with the relevant users of IC for the chosen as a case university. For the data collection and further analysis, it was used a framework consisting of three main components of IC: human capital, structural capital, and relational capital.

Findings discovered a large number of items that were considered to be important by respondents. Informants elaborated and expressed their opinions towards all three blocks of intellectual capital. All in all, seven items of human capital were discussed by respondents. Further, structural capital was presented by ten items, which compared to human and relational capital, is the highest number of elements of IC discussed by all three groups of respondents. Finally, a total number of nine items pertaining to the relational capital were mentioned by the respondents.

Lastly, three additional items that were mentioned as important by student and partner groups was found. These items were not presented in the adopted ICD framework.

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List of Abbreviations

BSC - Balance Scorecard

CSR - Corporate Social Responsibility

DIC - Direct IC Methods

DMSTI - Danish Ministry of Technology and Innovation

ECTS - European Credit Transfer and Accumulation System

GRI - Global Reporting Initiative

HC - Human Capital

HEI - Higher Education Institution

IC - Intellectual capital

ICD - Intellectual Capital Disclosure

ICR - Intellectual Capital Research

ICT - Information and Communication Technology

ICU - Intellectual Capital Report for Universities

InCas - Intellectual Capital Statement

IR - Integrated Reporting

MCM - Market Capitalization Methods

NOKUT - The Norwegian Agency for Quality Assurance in Education

NPM - The New Public Management

OECD - The Organization for Economic Co-operation and Development

R&D - Research and Development

RC - Relational Capital

ROA - Return on Assets methods

SC - Scorecard methods

SC - Structural Capital

SSB- Statistics Norway (Statistisk Sentralbyrå)

WACC - Weighted Average Cost of Capital

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Chapter 1. Introduction

The topic of intellectual capital (IC) has recently received much interest among researchers all over the world. Despite the plethora of publications available today, there still exists areas that are poorly investigated. The phenomenon of IC in Norway and Norwegian higher education sector is among those areas. Taking the mentioned above into consideration the present study attempts to tackle this subject by looking at the role of the intellectual capital disclosure (ICD) in one of the Norwegian universities. The present chapter aims to justify the choice of the research topic and the research settings, as well as to elaborate on the research purpose of the study and outline the study design.

1.1 Rational for the study

Traditionally the physical and human capital were recognized by the research community as an essential resource that facilitates the economic growth for the company. Knowledge has been recognized as a valuable resource for the firm as well (Nahapiet & Ghoshal, 1998). The role of knowledge has increased with the rise of the knowledge-based economy when the knowledge creation and dissemination has become a key driver in the value creation and economic growth. In this transition, organizations are more reliant on their intellectual assets than the physical inputs or natural resources (Powell & Snellman, 2004).

Intellectual Capital is broadly defined as knowledge, experience, information, intellectual material that the company could use to create monetary, utility, social and sustainable value. With other words everything that everybody knows in the organization that allows to gain a competitive advantage (Dumay, 2016).

The resource-based view suggests that the firm's resources, that are more likely to contribute to the competitive advantage must hold attributes of being valuable, rare, imperfectly imitable and difficult to substitute (Barney, 1991). Moreover, scholars highlighted the strategic character of IC responsible for sustained competitive advantage due to its rareness, value, as well as difficulties in its imitation or substitution (Martín-de Castro, Díez-Vial, & Delgado-Verde, 2019). Thus the knowledge assets or intellectual capital (IC) is named to be a key source of economic growth and competitive advantage of the firms (Martín-de-Castro, Delgado-Verde, López-Sáez, & Navas-López, 2011).

Intellectual capital disclosure (ICD), in its turn, has been viewed as an important mean to manage the knowledge assets and communication the companies' performance towards external users (Mouritsen, Larsen, & Bukh, 2001). Organizations disclose their intellectual capital in several ways, which include among others mandatory and/or voluntary reporting, intended as well as unintended disclosure of intangible assets (Panteleeva & Slettli, 2021). While intended disclosure takes place trough regulated and mandatory reports such as financial statements, the unintended disclosure was found to be often occurring trough management forecasts, internet sites or disclosure through information intermediaries (Healy & Palepu, 2001). Lately, the technological and society development enhances the shift towards disclosing the information through various types of online media, such as for instance Facebook and Twitter (Ndou, Secundo, Dumay, & Gjevori, 2018).

Originally, the issues related to IC reporting and disclosure were discussed in the research settings of for-profit organization, with only few attempts to tackle the area of public and non-for-profit organizations. However, it was quickly discovered that for-profit organizations are very sensitive when it comes to disclosure of their intangible assets. These prefer to disclose nothing rather than something that could potentially have negative effects for the firm's operation (Cuozzo, Dumay, Palmaccio, & Lombardi, 2017). Therefore, starting from 2000s, the number of publications studying IC, including disclosure, reporting, and management, in public and non-for-profit organizations started to grow. In this regard, the context of higher educational institutions (HEI) is currently gaining more and more attention all over the world (Panteleeva & Slettli, 2021).

During the several decades HEIs in many European countries undergone a higher education quality reform, initiated by the Bologna process. The purpose of reforms was to make a higher education more inclusive and accessible, as well as more attractive and internationally competitive (European Commission, n.d.-b). The process initiated changes in higher education sector which concerned methods of measuring institutions` performance and efficiency, procedures for qualification recognition for students from abroad, introduction of new forms of assessment and evaluation (Panteleeva & Slettli, 2021).

Moreover, the reforms initiated the adoption of New Public Management (NPM) in universities, which implies universities to be managed as for-profit organization (European Commission, 2021). These new political and institutional changes combined with competition in the sector put a pressure on the HEIs, forcing them to improve their efficiency, effectiveness, and transparency (Habersam, Piber, & Skoog, 2018; Ramírez,

Manzaneque, & Priego, 2017). Increased autonomy results in increased need for accountability and stronger relationships with their stakeholders (Ramírez Córcoles, 2013). Taking the mentioned above into consideration, the universities nowadays are put into position where they encouraged to provide information to their users and reduce the information asymmetry in order to gain legitimacy, reputation, and funding (Panteleeva & Slettli, 2021). It was argued that organizations could address these problems by disclosing relevant and timely information on their intangible assets (Ramírez, Tejada, & Gordillo, 2013) (Manes Rossi, Nicolò, & Tartaglia Polcini, 2018).

In this regard, the ICD is viewed as a useful tool to meet the needs and preferences for IC information for the relevant groups of users. In order to tailor ICD strategically, universities should understand the specific information needs of different groups of stakeholders (Panteleeva & Slettli, 2021).

Therefore, the purpose of the present study is to get a better understanding of the issue of ICD in higher education institutions, and in particular to shed a new light on the role the IC information plays for different groups of its users. For the purpose of this study, three groups of users have been chosen for empirical examination. These are students, employees, and existing and potential partners of the university. The present research is a qualitative case study where one Norwegian university has been chosen as a case for examination. The intention was to get a deeper understanding of the phenomenon at hand. The Norwegian university was deemed to be an interesting setting which can provide valuable results.

The following section outlines the profile of the research context.

1.2 Context of the study

The present section intends to introduce the context of the study – Norwegian High education sector and in particular one Norwegian university which has been chosen as a case for empirical investigation.

1.2.1 Higher educational sector in Norway

Norwegian higher education system consists of 10 universities, 9 specialized university institutions, 14 accredited university colleges, and 17 university colleges with accredited study programs (NOKUT, 2019). All institutions are administered by the Ministry of Education and Research (Kunnskapsdepartementet) and are subject to the Act Relating to Universities and University Colleges (Universitets- og Høyskoleleoven, 2005) as well as

general laws, agreements and provisions applicable to all state institutions (Panteleeva & Slettli, 2021). Majority of Norwegian HEIs are state-run (StudyinNorway, n.d.-a) and the education is free of charge.

The "Norwegian body for the education quality" (Norsk Organ for kvalitet i utdanning (NOKUT)), is an independent institution under the Ministry of Education and Research (Kunnskapsdepartementet), which performs important functions on behalf and by the task of the Ministry of Education and Research. The organization was established to ensure and promote the quality in education. Improving recognition of foreign education and evaluating, accreditation and approving the quality systems of Norwegian education (NOKUT, n.d.-b).

During the past decades, Norwegian higher education system has undergone a transition induced by the Higher Education Reform initiated by Norwegian government in 2004. Following the objectives of the Bologna process in the European Higher Education Area, Norwegian higher educational structure and grading scale have changed (Maassen, Moen, & Stensaker, 2011), aiming to make the certification held by the students after completing the courses recognizable by other countries.

In accordance the Lisbon Declaration it was introduced a new credit system that is equivalent to the European Credit Transfer and Accumulation System (ECTS). In addition, a new degree structure was adopted consisting of a lower degree awarded after three years of study (bachelor) with 180 ECTS, higher degree awarded after further two years of study (master) with 120 ECTS and PhD after three years of study (European Higher Education Area (EHEA), 2005; NOKUT, n.d.-a).

The Quality Reform has also increased the institutions` degree of autonomy and changed the model of public funding. The new funding model facilitates institutional performance by linking it to the annual funding's allocation. The annual performance of institutions is measured by the output which is measured on eight indicators. The performance indicators used are, among others, study credit points and number of graduates (European Commission, 2021). As a result of the new funding system, institutions have to put more effort on improving student recruitment and student performance (Maassen et al., 2011).

The new funding model gives to universities more autonomy in decisions, but also encourages to increase amount of students and exceed better cost efficiency. Expanding the mass of students being realized via increased internationalization and development of new

curricula which are responding to demands from the business world and the students' interests. Cost efficiency in public services implies strengthening management and leadership combined with the implementation of new public management (NPM) approach, requiring universities to be governed in the same way as corporate enterprises (Panteleeva & Slettli, 2021). The Educational Reform put Norwegian HEIs in a new position where they seek to achieve transparency and recognition at both national and international levels in order to develop. Following this purpose HEIs in Norway regularly disclose information concerning their goals and achievements, targeting various groups of stakeholders, and communicated via different channels. The scope and the content of this disclosure varies from institution to institution and depends on many objective and subjective factors. In order to understand the role of ICD the present study focuses on information disclosed by one university.

The following section outlines the university's profile.

1.2.2 Research context of the study: one university in Norway.

The Norwegian university which is chosen for this study is one of the largest universities in Norway. The university was established in 1996 after the merger of six research and higher education institutions and is primary regarded as a center for technological education and research (StudyinNorway, n.d.-b). Nevertheless, today the HEI offers several programs of professional study and covers most of fields of science as well as humanities, social sciences, and medicine, just to name some (Geschwind, Broström, & Larsen, 2020; StudyinNorway, n.d.-b).

The case university is an acknowledged organization, has eight faculties, and also includes museum and library (StudyinNorway, n.d.-b).

In 2020 the university enrolled 41 923 students (Statistisk Sentralbyrå, 2020) and is a working place for 10 171 staff employees (Statistisk sentralbyrå, n.d.). In the same year the HEI graduated 8096 students and awarded 406 PhD (The Directorate for Higher Education and Competence (DBH), n.d.) Moreover, the HEI is internationaly oriented organization with around nine percent international students and multiple international student organizations (StudyinNorway, n.d.-b).

1.3 Problem statement

The description presented in previous sections presented the main motivation and background of the present study as well as briefly outlined the context where the research object is considered. That is, the study intends to shed a new light in the issue of ICD in knowledge organizations, and one of the Norwegian universities has been chosen as a case.

Previous literature highlighted the important role of ICD in providing information for various groups of stakeholders. In this way, ICD is viewed as a value creating tool able to provide and facilitate relationships with different groups of stakeholders (Ramírez et al., 2013). The literature emphasized the following groups of stakeholders interested in IC information, though, to a various extent: the public administration, bodies of university government, students, teaching and research staff, administration and service staff, unions, private and public organizations, or any other party interested in university activity. Taken together, all these groups provide both external and internal user perspectives on subject matter (Panteleeva & Slettli, 2021).

For the purpose of the present study, it was decided to focus on three groups of users. That is students, employees, and partners as these were deemed to possess and able to provide valuable and up to date information regarding the subject matter from both internal and external point of view. To be more specific, universities operate with the knowledge either through technical and scientific research or through teaching (Ramírez et al., 2013).

In this regard, students are considered as important users of the intellectual capital provided by the university. The role of students in Norway has been recently growing, as a result of Higher Education Reform mentioned in a previous section. Today Norwegian students are placed in a center of the education system. Students' opinions and perceptions of the education process are taken into consideration and used as a basis for quality evaluation and improvement (Panteleeva & Slettli, 2021).

The university's employees, including teachers, researchers, administration and service staff (Ramírez et al., 2013) are a unique group of IC users, in a way that they appears as both providers and user at the same time.

The transformation of the funding model for HEIs was an important outcome of the Higher Education Reform. The Norwegian universities faced a new model of performance evaluation that stimulated increase of efficiency, transparency, accountability, and competitiveness in the sector.

The nowadays universities seem to play a more active role in attracting external financing via grants, collaborations as well as participation in research projects with external financing from the industry. In this regard, the university's partners (both existing and potential) become important stakeholders and users of IC information.

Thus, the present study intends to explore the role of ICD which is provided by one Norwegian university and considered from the perspectives of three groups of users (students, employees, and partners). Moreover, in order to tackle the research problem posed the present study adopted the ICD framework (Panteleeva & Slettli, 2021; Ramírez et al., 2017), which views IC as consisting of three main blocks. These are human capital, structural capital, and relational capital.

1.4 Outline of the study

The previous sections presented rational and context of the study as well as elaborated on the research problem and research perspectives used. The present section provides the outline of the study. The following chapter (Chapter 2) provides theoretical background and connections to previous research in the area of interest. An overview of the previous research and findings on IC are presented and briefly discussed. A framework adopted in the study is presented in the end of the chapter. Next chapter (Chapter 3) presents reflections on the methodology relevant for the study as well as research method used, including data collection and data analysis approaches adopted in the study. Chapter 4 outlines main empirical findings obtained from the field work and structured according to the framework presented in chapter 3. The last chapter (Chapter 5) presents discussion of results obtained in the study as well as main conclusions and implications.

Chapter 2 Theoretical background and framework of the study

In order to provide insights into the topic of IC and ICD in HEI sector, this chapter aims to present the review of literature on the investigated topic and outline the framework that is used in this study for data collection and further data analysis.

2.1 The development of IC concept

IC is an area of interest to numerous parties and subject of evolving research by academics and practitioners (Pew Tan, Plowman, & Hancock, 2008). It is necessary to provide an overview of intellectual capital research (ICR) and this section will outline different stages in the development of the ICR through the past decades.

The concept of intangibles can be found back in 1896 in the work of Lawrence R. Dicksee (Pedro, Leitão, & Alves, 2018) and has been acknowledged as an important organizational resource , due to its contribution to the value creation in organizations. ICR has been through three distinct stages of development and is currently in the beginning of the fourth (Pedro et al., 2018).

It started in the 1980s with the first wave of research (Dumay & Garanina, 2013). This stage characterized by focusing on the raise of awareness of importance of IC and its contribution to sustainable competitive advantage and attempted to make invisible IC more visible by various guidelines and standards.

The first stage embarked on work of practitioners in 1980s and 1990s trying to explain how organizations measure, report and manage knowledge and intangibles (Dumay, 2014). This stage helped to develop a "framework of intellectual capital" designed to identify and study IC elements (Pew Tan et al., 2008). It resulted in development of frameworks such as the Intangible Asset Monitor by Sveiby (1997), Scandia by Edvinsson and Malone (1997) (Veltri & Bronzetti, 2014) and balanced scorecard by Kaplan and Norton. The main argument was that the potential value of IC should be measured and reported (Dumay & Garanina, 2013).

The second stage continued to develop how to measure, manage and report IC and most important how the IC taxonomy is defined (Dumay & Garanina, 2013). Different classifications were created, helping to define and group different methods of IC evaluation.

This resulted in modelling more advanced guidelines, such as influential IC reporting studies of the Meritum Project and the Danish IC reporting guidelines (Veltri & Bronzetti, 2014). Many governments have followed: e.g., China by establishment of the Intellectual Capital Management, Europe with the "InCas" (intellectual capital statement). Also, the Japanese government created IC reporting guidelines, to raise awareness of value of IC to the firm's potential investors. This push, resulted in more regulated disclosure of IC and moreover for Integrated Reporting along with financial, environmental and social reporting (Dumay & Garanina, 2013).

Furthermore, the second stage research focused on how IC effects financial performance and value creation. Some argue that IC as a value driver is a source to greater profitability for the organization and that organizational knowledge is the key source of competitive advantage. However, the empirical evidence supporting that was rather inconclusive (Dumay & Garanina, 2013).

First and second wave of research contributed to development of terminology of IC, and establishment of various approaches to define the IC and explanation what IC is (Dumay & Garanina, 2013). According to Dumay and Garanina (2013:12) at this time the three components of IC referred to: "*human capital: the knowledge embedded in people; structural capital: the knowledge embedded in the organization and its systems; and relational capital: the knowledge embedded in customers and other relationships external to the organization"*(Dumay & Garanina, 2013).

Moreover, during the first and the second stages of ICR and the business society development, it became clear that value creation in world economy is driven by intangible assets. The second wave established a dynamic theory of IC, its role within value chains and value networks (Dumay & Garanina, 2013) .

The third stage of ICR investigating "how IC works", focusing on use of IC in practice. At this stage research attempt to gain an understanding of managerial implication for managing IC inside organizations, or how organizations understand, adapt and apply IC through praxis (Secundo, Massaro, Dumay, & Bagnoli, 2018).This stage is characterized by bottom-up research, opposite to previous top-down approach (Dumay & Garanina, 2013). The third stage of research aiming to gain a better understanding of impact of IC, moving away from attempts to determine IC concrete measures arguing that it is possible to implement IC practices without measuring them because the value of IC is dynamic and specific to the organization by the nature. The measurements needs to develop continuously, based on the

factors such as characteristic of organizations, political changes, economic and social environments, and development of plans and strategies in the organization (Secundo, Dumay, Schiuma, & Passiante, 2016).

During this stage, researchers begin to investigate how the concept of IC enters organizations. There are two points of view: strategical and accounting. Observations showed that if IC enters the company from accounting point, the firm`s initial objective would be to measure the IC in order to manage organizations. While strategical point can prompt new managerial practices aimed to create value through the exploitation of knowledge (Veltri & Bronzetti, 2014). In this case firms will focus on creating value from IC and to reflect on how they can further influence its creation (Chiucchi Maria & Dumay, 2015). At this stage it is also considered that value creating is not only monetary and focusing on the value of the product and service to the customers and stakeholders of the firms (Dumay & Garanina, 2013).

In the third stage researchers also examined ICD in organizational contexts (Cuozzo et al., 2017). Researchers have highlighted the need of IC reporting and disclosing both to internal and external stakeholders emphasizing the link with stakeholder theory and legitimacy theory (Secundo et al., 2016). An important way for researchers to understand whether IC is applicable inside organizations, is to determine if ICD is rooted in practice (Cuozzo et al., 2017).

The fourth stage in research was created by the rising of the knowledge economy and increased networking in society (Secundo et al., 2018). At this stage researchers explore how IC can be used to affect external environments, and IC direct and indirect social value, that is the benefits an institution provides to society (Secundo et al., 2018).

Furthermore, the fourth stage is taking IC outside of firm boundaries and set it into wider ecosystems, such as communities, cities, and countries. It aims to understand the impact of IC within those ecosystems and link internal knowledge inside organizations (human and structural) to the external knowledge outside organizations (relational capital). IC value is expanded beyond wealth and including impact of IC for society in which organization is operating (Secundo et al., 2018).

As summary, this section has outlined the four distinctive stages of intellectual capital research. From the first stage characterized with the early awareness, through the second stage of framework development, the third stage investigating how the IC works in praxis,

and finally the fourth stage, - a value creation in the wider ecosystems. Next section will describe different frameworks that were developed to measure IC in organizations.

2.2 Frameworks for measuring IC

In the current world, knowledge is the source of competitive advantage, and is seen among main production factors that firms should monitor and manage (Sánchez, Chaminade, & Olea, 2000). The increased importance of intangibles resulted in various methods of measuring the invisible assets (Bontis, 2001). This section aims to reviews some of the IC measurement frameworks developed in the past years.

Many attempts were made to develop a common framework in order to measure and report IC (Nazari, 2014). All the methods can be classified into four groups:

1. Direct IC Methods (DIC)- a monetary type that allows to estimate the monetary value of intangible assets by identifying its components (Nazari, 2014).
2. Market Capitalization Methods (MCM) allows to assess the value of intangible assets by calculating the difference between the firm`s market capitalization and its stockholder's equity (Nazari, 2014).
3. Return on Assets Method (ROA) attempt to identify an indicator to determine potential value or efficiency of IC (Nazari, 2014) .
4. Scorecard Methods (SC). These methods were developed to identify different components of IC and to report in graphical, or scorecard format. These methods enable companies to manage continuous their value creation activities (Gogan & Draghici, 2013).

The first, second and third categories focuses on the financial side and the monetary value of intangibles, while the last one focuses on indicators that can measure intangible resources and activities (Gogan & Draghici, 2013).

In the following section I present and overview some examples of IC frameworks. These were chosen, among many others, because these were perceived as good and illustrative examples.

2.2.1 Technology Broker (DIC).

Annie Brooking developed IC measurement model that helps to calculate the monetary value of IC. IC is defined as a combination of four components: market assets, human-centered assets, intellectual property assets and infrastructure assets (Nazari, 2014).

Market assets are market-related intangibles, established by the firm trough relationship with market and customers (Nazari, 2014). Some examples are customers, brands, repeat business, and distribution channels among others (Bontis, 2001).

Human-centered are those assets belonging to the employees in organization as collective expertise, leadership, problem-solving capability and more (Nazari, 2014).

Intellectual property assets are legal protection of the company`s assets such as infrastructure and corporate assets, copyright, patents, trademarks, know-how, trade secrets and various design rights.

And last, the infrastructure assets are those methodologies, technologies and processes that enables the company to operate. These includes company culture, databases of information, communication systems and methodologies for assessing risks to name some (Bontis, 2001).

Brooking elaborated a 20-question questionary, by answering, organization would make up the IC indicator. The indicator questionary would further help organization to diagnose the IC management processes and identify potential improvement areas (Bontis, 2001).

Next is the IC audit process, when firm examines each component of Brooking`s IC model via specific audit questionnaires. The audit process would enable the company to recognize weakness and strengths of IC possessed by the particular company (Bontis, 2001).

Based on the audit process, the monetary value can be assigned to the IC using three methods:

1. The cost approach, value is determined based on replacement costs of the asset.
2. Market approach where dollar value is assessed by the relevant market (Nazari, 2014).
3. Income approach, when the value assigned by the asset`s income-producing capability (i.e. the NPV of asset`s net cash benefits) (Bontis, 2001).

2.2.2 Market-to-Book Value ratio (MCM)

Some argued that difference between company`s market value of shares and book value of the assets presented on the balance sheet can designate the company`s IC value. The argument was discussed considering accounting methods that are not able to present the value of intangible assets. In contrary, market-to-book value ratio was argued to be a reasonable proxy of the IC. In addition, the ratio is easy to understand and quickly to calculate (Nazari, 2014).

However, negative sides of this approach are the violation of the market that can respond to economic factors that are not under managers` control. Moreover, different tax authorities may allow some accelerated depreciation methods stimulating re-investment of the capital in new equipment. With this method where depreciation rate is faster than the actual wear down of equipment, the reported book value in balance sheet could be understated (Nazari, 2014).

2.2.3 Navigator (Scorecard method)

Skandia seems to have been the first company that started to measure their knowledge assets. The company developed their first internal IC report as early as 1985, followed by an IC addendum together with financial report to their shareholders in 1994 (Bontis, 2001).

Leif Edvinsson is a developer behind the Scandia`s reporting model "Navigator". He developed a reporting model that focuses on financial, customer, process, renewal, and development, as well as human capital. The model attempt to identify the underlaying hidden dynamic factors that create value for the company. The intellectual capital included factors of human and structural capital added together and embraces organizational technology, its customer relationships, and the employees skills that ensure competitive advantage to Scandia (Bontis, 2001).

According to the model, the human capital, as a part if IC is defined as capabilities of employees as knowledge, skills, innovativeness, and ability to perform their tasks. This capital is not owned by the company (Bontis, 2001) .

Structural capital, however, is owned by the company and therefore can be traded. It includes everything in organizational capability to support employees` productivity.

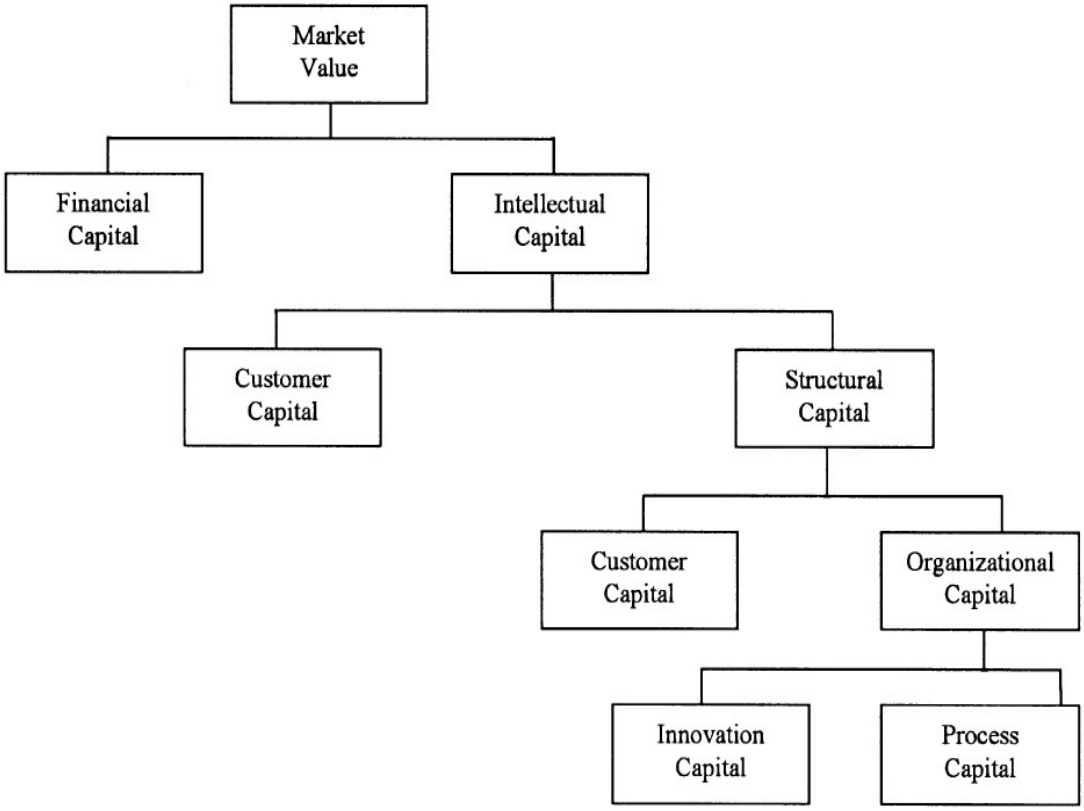

Figure 1 Skandia's value scheme (Bontis, 2001)

Structural capital includes features such as software, hardware, databases, organizational structure, patents, and trademarks. It also includes the customer capital, or the relationships organization has developed with its key customers (Bontis, 2001). The model presents both financial and non-financial features of the company, combined, giving a more precise estimate of company`s market value. The model visualizes IC of the company, and the organization`s IC is presented as a function of two sums *C* and *i*

Organizational IC= iC

Where *C* is an overall monetary value of IC value and *i* is the coefficient of IC efficiency (Bontis, 2001).

2.2.4 Meritum Guidelines (Scorecard method)

Meritum Guidelines was developed by researchers from six European countries including a steering committee, as well as other participating institutions (Nazari, 2014).

The result was an ultimate guideline, "Guidelines for Managing and Reporting Intangibles", established by observing the best practices of 80 European firms. The aim of the Guidelines is to provide a framework for the identification, measurement, control of intangibles and to suggest criteria for disclosure (Nazari, 2014) .

In this model, vision, mission, and objectives must first be identified. From the objectives, the managers should identify intangible resources and activities that could potentially increase the value of these intangible resources. The processes and activities needed to assess and monitor intangible activities and their impact should also be defined. Once critical intangible is defined, proxy indicators for each intangible activity should be settled.

As a final stage, an action phase to be established, where the intangible management system should be integrated to the firm's managerial routines (Nazari, 2014).

Meritum Guidelines recommends that companies report on three major categories.

1. Vision: Reporting on the firm's critical intangibles to achieve identified objectives, through strategies and core competencies representing the firm's main objectives.
2. Intangible resources and activities: Reporting on how intangibles are utilized to create and improve value of resources.
3. Indicators: Reporting on the intangible resources and activities, as an evaluation of the company's potential risk and earnings (Nazari, 2014).

2.2.5 MVA and EVA (ROA)

Economic Value Added (EVA ™) belongs to the market models, ROA methods (Nazari, 2014). In general, the objective of EVA ™ is a performance measure that takes into account all ways in which the company could add or lose value (Bontis, Dragonetti, Kristine, & Roos, 1999). This model use variables of capital budgeting, financial planning, performance measurement, goal setting shareholder communication as well as incentive compensation to gain an extensive performance measure (Bontis, 2001).

The concept of EVA is tied to the concept of Residual Income (RI), which is defined as the remaining value in a company, after the firm`s stockholders and other capital providers have been compensated (Bontis et al., 1999). The only difference, is that it was paid more attention to EVA (Bontis, 2001). Based on that, some suggest that EVA is a method to measure intangible assets, although the method was developed for something else (Bontis, 2001; Nazari, 2014).

EVA is an improvement to the Market Value Added (MVA™) calculation. MVA reflects the difference between the start cash that investors have put into the business and its present value that they could get by selling their shares. Managers maximize the wealth of shareholders by maximizing the spread between these two measures (Bontis, 2001). MVA presenting a market evaluation of the firm`s net present value (NPV) of current and intended capital investment projects. A disadvantage, however, is that wins, and losses of the company are aggregated from historical perspective and showcase last year results plus current market price. Therefore, an organization with prosperous history would show positive MVA, despite their poor current and future prospects (Bontis, 2001) .

With regards to EVA, it offers to improve MVA™ calculations and focuses on the MVA changes caused by new projects, by focusing on maximizing of incremental earnings above capital costs (Bontis, 2001).

EVA: Net sales - operating expenses - taxes - capital charges = EVA

Capital charges are calculated as the Weighted Average Cost of Capital (WACC) multiplied by the total capital invested. To have a positive EVA, company should have rate of return on capital greater than it`s required rate of return.

However, some state that it is possible to manage IC effectively, without measuring. The challenges that most of the companies' face is to find metrics that actually reflect the outcomes of the strategy. By implementing the existing IC frameworks and modifying it to the company needs, it is possible to manage the IC using not only the numbers, but also narrative approach, that rather describes how the company has mobilized its resources to achieve their goals (Dumay & Rooney, 2011).

In this section I have described a limited selection of frameworks that has been developed throughout years to measure the IC. As a summary, there are two categories of measuring IC: One measures the monetary value of intangibles, and the second one focuses on indicators. Next section will outline the disclosure of IC through different means.

2.3 IC disclosure

Disclosure and reporting are often synonymously used terms. However, some argue that reporting and disclosure are different concepts. According to Dumay (2016:178) disclosure can be defined as *"the revelation of information that was previously secret or unknown"* (Dumay, 2016). Reporting can also be seen as a detailed periodic account of a company's activities, as well as financial condition, and as prospects that is made available to shareholders and investors (Dumay, 2016).

In any case, the aim of disclosure should be to provide information that is relevant, reliable and timely to their stakeholders as a decision support concerning their relations with the organization, even when they do not have an influence on the provided information flow (Bontis, 2003; Manes Rossi et al., 2018).

There are several theories that can be used for analysing and justifying the ICD in the organizations, those are agency theory, signalling theory, legitimacy theory and stakeholder theory (An, Davey, & Eggleton, 2011).

The stakeholder theory takes as a unit of analyse the relationships of an organization with array of its stakeholders. The stakeholders of the organization are groups or individuals that affected or can affect the company (Parmar, Freeman, Harrison, Purnell, & De Colle, 2010). Stakeholders can include shareholders, customers, suppliers, employees, leaders, as well as government and society (Neysi & Mazraeh, 2012).

The important notions of the stakeholder theory are the view of an organization as a part of a broader social system in which it operates, and the concept that the entity should be positively accountable for the array of the stakeholder groups. Traditionally the disclosure of the accounting information is seen as an important factor for organizations to acquire their accountability (An et al., 2011). Recently, information regarding the IC, which is considered as a key resource for the success of the corporate, is more and more demanded by various stakeholders. Thus it can be expected that ICD could reduce the information asymmetry and consequently improve the relationships between the organization and its stakeholders (An et al., 2011).

Further, organizations are already disclosing the information about their intangibles in various ways: voluntary, mandatory; intended and unintended (Ndou et al., 2018). The academic literature review points out several means to disclose data on the IC such as IPOs and LinkedIn, intellectual capital reports, annual reports, and financial statements. In

addition is the integrated reporting that includes intellectual (structural), relational capital as part of six capitals framework "IR". There are also innovative ways to disclose the IC using media resources, especially the internet that potentially can reveal more about an organization than they wish to disclose (Cuozzo et al., 2017).

In academic literature, at least three ways to disclose IC is found with regards to HEI sector. This is in annual or other formal reports, in the specific IC reporting framework, and in websites or social media as an online IC disclosure (Panteleeva & Slettli, 2021).

Accordingly, next two sections will describe formal reporting that can contain IC and online disclosure.

2.3.1 IC reporting

The IC reporting can be seen as a process that involves identifying, measuring and reporting knowledge resources of the company in order to present how the firm uses its IC (European Commission, 2006).

With a solid start with IC reporting from Skandia and Meritum in the late 1990s and early 2000s, this practise was later supplanted by corporate social responsibility (CSR) reporting, and frameworks such as the United Nations Global Compact (2009) and the Global Reporting Initiative (GRI) (2013). Currently, there are no reports that are focused solely on IC in listed companies since 2012 (Dumay, 2016).

However, the published annual reports have an important function as a source of information for many external stakeholders that are interested to assess an organization`s financial health. The amount of the IC information disclosed in annual reports can provide a significant financial benefits to an organization by lowering the risk and consequentially lowering the cost of borrowing (Bontis, 2003).

Several studies have investigated the categories of information of IC that are typically disclosed in annual reports. For instance, among a sample of 30 UK universities, human capital was most disclosed in annual reports. Another three-year longitudinal study investigated 90 universities from New Zeeland, Australia, and UK. They found most disclosed categories of IC are internal capital and human capital. While, the quality index score was highest of the external capital (Manes Rossi et al., 2018).

Moreover, scholars revealed that content and the level of the information disclosed vary based on different variables. For instance, study in European biotechnology firms has investigated the voluntary ICD trough the information presented in the Management Discussion and Analysis section of the annual reports published by the companies and its relationship with the governance variables (Cerbioni & Parbonetti, 2007). The governance variables in this case were: board size, composition of independent directors, board leadership in terms if CEO is also the chairman, and structure or composition of the audit, nominating and compensation committees. The findings showed that both level and quality of the IC information disclosed by the companies are related with the governance variables (Cerbioni & Parbonetti, 2007).

Couzzo (2017) argue that annual reports are not suitable as a source for corporate disclosure on IC. He states that it is backward-looking as well as a one-way source of communication, which are two significant failings towards today's forward focused interactive communication mediums (Couzzo, 2017).

With regards to universities, one of the main experiences on the mandatory reporting of the IC is in HEI at Austrian Universities. During preparation of the new Austrian university law, the Austrian Ministry for Education, Science and Culture, settled a project team to develop an IC report model which met the specifics of their knowledge production process (Silvestri & Veltri, 2011).

As a result, since 2007, Austrian universities are required to publish yearly Intellectual Capital Reports, called "Wissensbilanz", or "Knowledge Balance Sheets" (Nicolo', Manes-Rossi, Christiaens, & Aversano, 2020).
The report must as minimum outline indicators of:

1. The university's activities, social goals and voluntary objectives and strategies.
2. The university`s intellectual capital, broken down into three aspects: human, structural and relationship capital.
3. The processes set up in the performance agreement including outputs and impacts (Silvestri & Veltri, 2011).

The reporting of IC for Austrian universities should fulfil two aims: (1) provide internal information for the management of intangible resources, (2) provide information to external stakeholders with regards to the effective use of IC. In addition, this process of preparing an

IC report foster universities to learn about their knowledge production process (Silvestri & Veltri, 2011).

Moreover, the analysis of the "Knowledge Balance Sheets" has confirmed that this tool can increase transparency to stakeholders and allows to compare organizations, and therefore creating a new ground for accountability (Nicolo' et al., 2020). However, scholars has failed to find a strong support whether the information disclosed in the KBS meets the stakeholders needs (Ndou et al., 2018).

Another reporting framework that are specifically designed for universities was developed by the high-level expert group, named Observatory of the European Commission. The team has developed the IC Report inspired by the DMSTI (Danish Ministry of Technology and Innovation) guidelines, Meritum experience and Ricards project among others (Silvestri & Veltri, 2011). The group has formulated a guide "Intellectual capital report for universities" that could help universities to develop IC reporting system, ICU reports.

An ICU report includes three sections with description of:

1. Vision of the institution, that presents the narrative of the mission of the university.
2. Summary of intangible resources and activities.
3. System of indicators, including a set of resource indicators for IC measurement (Silvestri & Veltri, 2011).

The aim of the initiative is to develop a common framework for reporting of IC in universities (Silvestri & Veltri, 2011). However, as for today, there is no mandatory reporting in European universities, except in Austria (Nicolo, et.al, 2020).

This section has presented the ICD contained in annual reports and frameworks to disclose IC developed for universities. Annual reports can contain the information regarding IC, but it is generally acknowledged that they are backward looking. ICD through the formal frameworks in universities can help to measure, manage, and apply strategically the value creation activities in educational institutions. It is also a tool to compare universities and can by enhancing the transparency on their most crucial resources, enhance accountability and develop good relations with stakeholders. The challenge is whether frameworks meet stakeholders` information needs. Following section will outline an online-based disclosure on the information containing IC.

2.3.2 Online disclosure

Evolution in technology, Big Data, and shift in the society communication pattern, affecting the way organizations disclose information about their IC. There is a shift from traditional mediums towards alternative practice of using online channels as websites, Facebook, Twitter, Google, and social reports for these purposes. The information that is disclosed is not necessary intentional disclosed as IC, but is massive, variable and valuable information from a variety of sources that could be used to gain relevant insights for IC of an organization (Ndou et al., 2018) . Moreover, in contrast to the periodic reporting, the internet-based ICD are more dynamic and followed, and are one to many-ways communication (Dumay, 2016).

Social media and other online channels are used to broadcast and share relevant information such as news, events, alerts, and updates towards broad network of organization`s stakeholders and becoming a primary source for ICD, and sometimes even more than companies wish to disclose. Besides, the social influence of the social networks such as LinkedIn allow strategic and targeted disclosure to particular groups of stakeholders. Thus, the data that are communicated through the online channels could be used in ICD practice to give relevant, and timely insights into IC in the targeted and tailored way to meet the needs of the users. As a result, the online tools might easily engage and reach wider population of stakeholders, that is in correspondence with the fourth stage of the research (Ndou et al., 2018).

Public organizations universities are required to satisfy the public demand for transparency and accountability. Online disclosure can address this issue by fulfilling the demand of different stakeholder groups and enhance awareness of the institutional value creation processes resulting in improving stakeholders' relations with university and facilitating their support and approval. Studies highlight additional advantages of the online disclosure in the public sector: greater transparency and accountability towards stakeholders, more accessibility, and lowered costs as well as timelier spread of information (Manes Rossi et al., 2018).

Universities rely on the online tools in order to communicate information on IC to variety of stakeholders. There are several studies examining online disclosure in the HEI sector, one has investigated online ICD through a content analysis of websites of Italian universities. The study presented a view of the IC categories of internal (organizational) capital, external (relational) capital and human capital, through websites. The results of this study have

confirmed, among other, that the web can overcome the limitations of the annual reports and be an effective and useful means to disclose information of institutional IC. Furthermore, findings showed the broad use of ICD by universities and most disclosed categories were human and internal capital, followed by external capital. The findings of the study were consistent with the fact that knowledge-intensive institutions as universities are more motivated to disclose information regarding their human resources and research activities (Manes Rossi et al., 2018) .

Online ICD was also explored by case study of a private university in Albania conducted by Ndou et.al (2018). Authors investigated disclosed IC through different media channels including university`s website, Facebook page, periodic reports, and future goals statements. Findings highlighted the high extend of qualitative and quantitative IC data information disclosed through non-traditional sources as social media, online reports, although the information was disclosed unintentionally. Moreover, most used channels for relevant IC information were non-traditional sources, including website, online reports, and social media pages (Ndou, et.al, 2018).

To summarize, when examining ICD by universities, it is important to take into consideration also non-traditional tools for "revealing the unknown" and online disclosure deemed to be a means used actively by universities to communicate their knowledge-based activities, though the information is not always intentionally disclosed as IC.

This section has taken ICD into discussion. The ICD can take different form and can be disclosed on voluntary, unvoluntary basis, it can also be disclosed intentionally or unintentionally. Traditionally, important information for the various groups stakeholders is presented in annual, or other formal reports. However, it is argued that the annual accounts do not present a full information regarding the IC, and therefore it is not a good way to satisfy the needs of the stakeholders. The reporting particularly on IC is nearly dead in listed companies. However, Austrian universities still practice mandatory reporting on their IC, called Knowledge Balance sheet. Finally, scholars indicate that online disclosure is a powerful tool to enhance the relation with the stakeholders and increase transparency for knowledge-based activities by the institutions, especially because online based disclosure is usually dynamic, followed and provide timely information on organization`s activities. Universities have adopted online disclosure through the websites, and online media.

Next section will discuss the perspective of stakeholders on the IC.

2.4 Stakeholder perspective on IC.

As it is claimed by the stakeholder theory, institutions should reduce information asymmetry by disclosing relevant information to their stakeholders. It will enhance the relation between the organization and its stakeholders, resulting in greater accountability of the firm (An et al., 2011). The political, economic, and social changes in HEI sector, entail universities to strengthen their transparency in order to enhance accountability. Therefore, institutions should pay a greater attention to the different stakeholders groups and their information interests, when designing the communication strategy, especially information regarding their intangible assets (Ramírez-Córcoles & Manzaneque-Lizano, 2015).

The knowledge about IC information needs, for different stakeholder groups is extremely scarce and fragmented (Panteleeva & Slettli, 2021). However, some scholars paid attention towards this topic. This section will discuss the research that throws light on the perspective of the stakeholders towards the information need for IC in the HEI sector.

A study of the ICD in the context of the Spanish universities has investigated the importance of reporting on IC for universities and information preferences of the university stakeholders towards presentation of information on IC (Ramírez-Córcoles & Manzaneque-Lizano, 2015). Authors considered the group of the Social Councils members of the public Spanish universities. The population included representatives of various social groups as university government, employees (teaching and administrative staff), business and union organizations, students, and public administration (Ramírez-Córcoles & Manzaneque-Lizano, 2015).

Based on the research findings, all group of users showed a great interest in the ICD by the universities. Of those who was surveyed, 89,1% was highly interested that universities publishing the information regarding their IC (Ramírez-Córcoles & Manzaneque-Lizano, 2015)

Moreover, the respondents attributed a great importance to indicators of human capital, specially “Academic and professional qualifications of teaching and research staff”, “Teaching capacities and competences”, “Research capacities and competences” and “Scientific productivity”. In addition, findings revealed that several items of the structural capital were seen as important by the Spanish respondents. Following elements were considered as most important: “Research management and organization”, “Effort in innovation and improvement” and “Intellectual property”. Finally, following elements of

relational capital block was found to be of interest : “Relation with the business”, “Graduate employability”, “Student satisfaction”, “University`s image” and “Application and dissemination of research” (Ramírez-Córcoles & Manzaneque-Lizano, 2015).

Authors also stated that there is no homogeneous pattern on IC reporting in universities because IC is unique to each organization and its value and relevance rely on its potential contribution to the key objectives of the institution. Thus, the university should identify the type of information needs of their stakeholders according to the features and environment of each individual organization (Ramírez-Córcoles & Manzaneque-Lizano, 2015).

Another study examined the extent and quality of information disclosed by Czech universities in relation to the information need of the students (Kuralová & Margarisová, 2016). The study has examined the information on IC disclosed in the annual reports of public universities and the value stakeholders place on the different indicators of the IC. According to the results of the study, Czech students information need is highest for the relational capital, followed by structural and human capital (Kuralová & Margarisová, 2016).

Findings revealed, students assign a high level of interest to following items of the human capital: the highest interest level assigned to item regarding the capabilities of employees (their know-how, experience, creativity and so on) followed by “Highest achievement of qualifications of employees” and “Employee satisfaction”. In the area of structural capital students showed interest in information regarding “Level of information and communication services” and “Availability of information infrastructure at university” (ICT), followed by the items attached to management and university quality- “Benchmarking” and “External review of the quality of education”. In terms to relational capital the study discovered that students are particularly interested in the universities` “Cooperation with future employers”, followed by the item of the area of internationalization “Interest in education and involvement in international education” (Kuralová & Margarisová, 2016).

The study has also revealed that universities do not meet all the information demand of the students. The information regarding area of human capital block was under communicated by the universities. 41% of variables under the HC did not satisfy the information need of the stakeholders (Kuralová & Margarisová, 2016).

Another study investigated the ICD in the Norwegian University Sector. Authors explored the importance of the ICD to the university stakeholders (Panteleeva & Slettli, 2021). Two

groups of stakeholders were examined under this research: university employees and students. The results of the study showed that for both groups of users' information considering IC is of high importance. The information concerning relational capital was discovered to be most relevant for disclosure. The group of students attributed the higher score to such indicators of relational capital as "Student satisfaction", "Relation with the business" and "Environmental responsibility". The group of employees has assigned the highest interest to the "Application and dissemination of results" and "Student satisfaction" (Panteleeva & Slettli, 2021).

Next in terms of importance to the students and employees was the structural capital block. According to the results, while employees gave high values to information regarding research- related items as "Facilities and material resources for research and development" and "Research management and organization". The student group attributed higher value to development and innovation-related indicators such as "Effort in innovation and improvement" , "Evaluation and qualification processes and activities within the institution" and to information systems and technologies items "Information system" and "Technological capacity" (Panteleeva & Slettli, 2021).

Finally, the human capital block has received a lowest interest. However, while students attributed higher values to items representing competence and qualifications of teaching and administrative staff, the group employee has valued research activities at the individual level as highly relevant for disclosure (Panteleeva & Slettli, 2021).

Overall, scholars indicate that stakeholders emphasize information regarding IC of organizations. However, there are differences in the importance of the IC across the stakeholder's groups and scare research in the area. Furthermore, the needs of universities for accountability and transparency considers the informational needs of stakeholders, therefore relevant users play an important role, as well as management of intangibles in organization.

This section has outlined the research that focuses on the user's information needs. Previous studies confirm that stakeholders show a great interest toward IC disclosed by universities. The level of interests towards different blocks of IC can vary among different groups of stakeholders. Scholars have also discovered the inconsistency between information disclosed by the institutions and the amount of ICD satisfying needs for information from the stakeholder perspective. Next section will present the framework that was adopted for this study.

2.5 Intellectual capital disclosure framework of the study summarized.

The literature lists various frameworks to identify, measure and report IC of the organization. Some divide IC into market assets, human-centred assets, infrastructure assets and intellectual property, as "Technology Broker" measurement model does (Nazari, 2014). Another framework (Navigator) divides the IC into customer capital and organizational capital (Bontis, 2001). However, the most used classification divides IC into human capital, structural capital, and relational capital.

This section presents the framework used for this study, that is consisting of three blocks: human capital, structural capital, and relational capital, and presents the items that are attached to the three components of IC. The methodological framework was adopted form the framework used by Slettli and Panteleeva (2021) in the context of Norwegian universities (Slettli & Panteleeva, 2021). The framework was originally developed for the study of Spanish universities and is created on the basis of the Intellectus Model that includes 42 intangible elements with accordance to HEIs (Ramírez et al., 2017). It should be stressed that there is continuous interaction between human capital, structural capital, and relational capital. These links are represented by the aspects that can be found in more than one category of IC, but under different indicators. The three groups should not be seen as separated sections but as highly interlinked groups of intangibles as it is presented on figure 2.

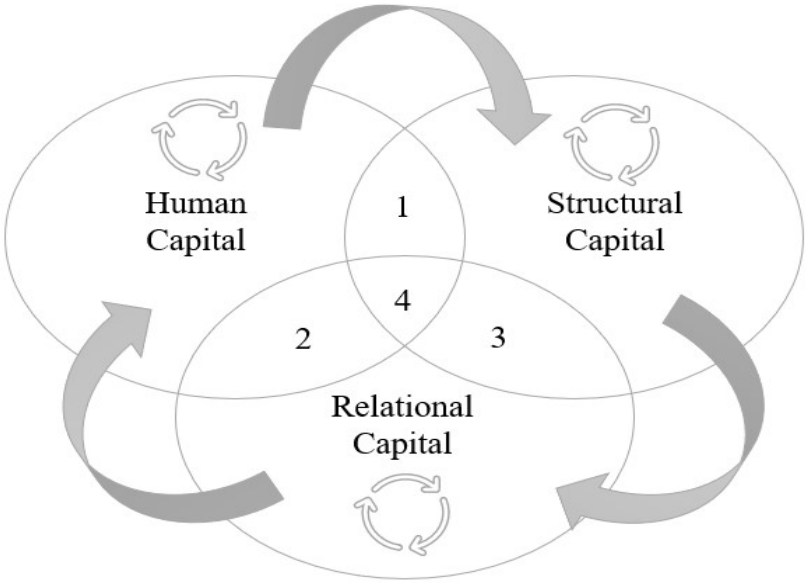

Figure 2 Groups of intangibles of the intellectual capital (Sánchez et al., 2000)

Following sections outlines the three blocks of the IC and present the framework. The framework is summarized in the end of this section in Table 1.

2.5.1 Human capital

Human capital (HC) refers to knowledge in its explicit and tacit form, possessed by the people and people`s ability to generate knowledge (Martín-de-Castro et al., 2011). More specifically, human capital of an organization embraces employees knowledge, skill, innovativeness and their ability to handle their work tasks (Bontis, 2001). The key characteristic of human capital is that is not owned by the company, but is knowledge employees take with them home from work (Sánchez et al., 2000).

The internal structure of human capital could be divided into three main dimensions: knowledge, abilities, and personal behaviors. Knowledge is embedded in the firm`s employees, and includes such variables as formal education, training, experience, and personal development. Abilities embrace knowledge related to "know-how" and includes all utilities, dexterity, and talent of the employee that a person develops based on personal experience and practice. Finally, personal behaviors are people`s willingness and attitudes towards their tasks, jobs, and organizations. It referring to: feeling of belonging and commitment, job satisfaction, self-motivation; flexibility, and creativity among others (Martín-de-Castro et al., 2011).

In the case of the universities, the human capital is related to the people belonging to the university, which is in this case teachers, researchers, administration, managers and service staff (Panteleeva & Slettli, 2021). It includes a sum of their explicit and tacit knowledge as well as their skills and experiences that they own, use and acquire through the formal and non-formal education and other processes that are included in their activities (Ramírez et al., 2017). Some examples can be named are: personal predispositions, professional competences, specialized skills, context-specific knowledge, leadership and management skills, among other (Panteleeva & Slettli, 2021).

Human capital block is presented by the 12 intangible elements in the adopted framework of the study (Table 1).

2.5.2 Structural capital

Structural capital can be seen as a knowledge owned by the firm, that remains within the organization at the end of the working day (Sánchez et al., 2000).

Structural capital can be defined as a non-human pool of knowledge in the company, related to the organizational structures such as organizational routines, the structure of the business, as well as intellectual property " (Martín-de-Castro et al., 2011) .

While human capital is difficult to manage, since it possessed by employees, structural capital is controlled, owned, and managed by the firm (Mouritsen et al., 2001).

Since the early IC research, it was recognized the need to separate intellectual assets in those that linked to the innovation, intellectual property as know-how, patents, trade secrets and those linked to the infrastructure, such as databases, information and telecommunication technologies and organizational culture (Martín-de-Castro et al., 2011). Accordingly, the structural capital can be divided into two: organizational capital and technological capital.

Organizational capital is related to the organizational infrastructure. This group of structural capital results from the knowledge that is both explicit and implicit, formal and informal by the nature, which gives structure and organizational continuity to the activities and processes performed by the organization (Martín-de-Castro et al., 2011).

The technological capital is the sum of the knowledge that is related to the development of the activities and functions of the operations technical systems within the entity that are responsible of obtaining new products and services, development of efficient internal processes and evolving organizational knowledge base to develop future technological innovations (Martín-de-Castro et al., 2011).

With regards to HEIs, structural capital consists of the university`s explicit knowledge related to the internal process of dissemination, communication, and management of the scientific and technical knowledge at the university (Ramírez et al., 2013). The organizational capital of the university refers to the operational environment obtained from the interaction between organizational routines, management and organization processes, organizational culture and values, internal procedures, quality and the scope of the information system, research and so on (Ramírez et al., 2017)

The technological capital may include archives, bibliographical and documentary resources, technical developed plans and products, patents, licenses and software among others and presents the technological resources of the university (Ramírez et al., 2017).

In the framework, structural capital is presented by 14 indicators (Table 1).

2.5.3 Relational capital

The relational capital refers to the relationship the company has with its external actors (Sánchez et al., 2000), including economic, political and institutional relations and the picture external actors have for organization, for instance brand image or reliability (Ramírez Córcoles, 2013).

Some authors describe the relational capital referring to the customer relationships as it is described e.g. in the frameworks "Skandia Navigator" and "Balance Scorecard". However, other studies take the concept beyond customers adding other relational assets: corporate reputation and image, business partners and all the external relationships of the organization (for instance, its suppliers, allies, trade unions etc.) (Martín-de-Castro et al., 2011).

Due to its complexity and heterogeneity, the relational capital is, perhaps, less explored than the other two kinds of IC. When describing relational capital, one should emphasize how organization interact with its environment and absorb, exploit, and explore new knowledge in order to maintain its competitive advantage position. The environmental agents that relational capital relates to consist of customers, suppliers, allies; other social agents; and corporate reputation (Martín-de-Castro et al., 2011).

Furthermore, the relational capital can be useful to the organization because it can provide market valuation of organizational knowledge stock and can provide information about needs and opportunities at the market guiding the organization on how to improve and develop a new knowledge. Thus relational capital can be crucial for making decisions regarding organizational knowledge exploitation, identifying market trends and "technological opportunities" (Martín-de-Castro et al., 2011).

Relational capital of the university embraces all the economic, political, and institutional relationships that university has developed and maintained with its non-academic partners, such as enterprises, non-profit organizations, local government, and society in general. The relational capital also reflecting the perception that other have about the university, as an image of the organization, reliability and its appeal, among others (Ramírez et al., 2017).

The relation capital block includes 16 items of IC that are presented in the adopted framework (Table 1).

Table 1 The IC framework for analysis of ICD in universities.

Human capital	Structural capital	Relational capital
HC1. Typology of HEI staff (data about growth or decrease in staff, age of staff, contractual conditions, etc.)	SC1. Facilities and material resources supporting pedagogical qualifications and innovation	RC1. Efficiency of graduate teaching (average duration of studies, dropout rate, graduation rate, etc.)
HC2. Academic and professional qualifications of teaching and research staff (% of doctors, % of research assistants, etc.)	SC2. Facilities and material resources for research and development	RC2. Student satisfaction
HC3. Mobility of teachers and researchers (% of teachers on fellowships, etc.)	SC3. Evaluation and qualification processes and activities within the institution	RC3. Graduate employability (employment rate, time until first employment)
HC4. Scientific productivity (books, articles published, etc.)	SC4. Organizational structure	RC4. Relations with students (capacity for responding to student needs, permanent relations with alumni, etc.)
HC5. Professional qualifications of administration and service staff	SC5. Teaching management and organization (academic networks, teaching exchange, teaching incentives, etc.)	RC5. Relations with the business world (spin-offs, contracts, and R&D projects, etc.)
HC6. Mobility of graduates	SC6. Research management and organization (internal communication of results, efficient management of research projects, research incentives, etc.)	RC6. Relations with society in general (institutional representation in external organizations, collaboration on national and international projects, etc.)
HC7. Efficiency of human capital	SC7. Organization of scientific, cultural, and social events	RC7. Application and dissemination of results (dissemination of results, appropriateness of research)
HC8. Teaching capacities and competences (pedagogical capacity, teaching innovation, teaching quality, language proficiency, etc.)	SC8. Productivity of administrative, academic and support services	RC8. Relations with the media

HC9. Research capacities and competencies (research quality, participation in national and international projects, % of doctors, etc.)	SC9. Organizational culture and values	RC9. University image
HC10. Research group capacity (capacity for teamwork)	SC10. Effort in innovation and improvement (expenditure on innovation, staff working on innovation)	RC10. Collaborations and contacts with public and private organizations
HC11. Academic and administration leadership capacity	SC11. Management quality	RC11. Collaboration with other HEIs
HC12. Continuing education and training activity	SC12. Information system (documented processes, databases, use of ICT)	RC12. Strategic links
	SC13. Technological capacity (total expenditure on technology, availability and use of computer programs, use of intranet/Internet, etc.)	RC13. Relations with quality institutions (NOKUT, DIKU, etc.)
	SC14. Intellectual property (patents, licenses, etc.)	RC14. An HEI's regional, national, and international reputation
		RC15. Social engagement and regional development
		RC16. Environmental responsibility

(Ramírez et al., 2017; Slettli & Panteleeva, 2021)

In this section I have presented the methodological framework for intellectual capital disclosure in universities. The framework was adopted from the previous study in the context of Norwegian and Spanish universities (Ramírez et al., 2017; Slettli & Panteleeva, 2021). The adopted framework includes human capital, structural capital and relational capital that are further broken into 42 indicators.

In this chapter I have presented an overview of the literature and the framework that will be used for collection and analysis of empiric data.

Chapter 3 Research method

The purpose the present study is to explore the role of ICD for three groups of users: students, employees, and partners of one case university in Norway. The present chapter intends to outline the research method applied in the study to uncover the problem statement posed. This includes research design, data collection and data analysis methods used as well as ethical considerations and limitations of the study.

3.1 Research strategy and design

A research design is a plan for conducting a research study with regards to answer on the research question of interest ("Encyclopedia of Survey Research Methods," 2008). The present research is an exploratory case study where one Norwegian university is used as a case. The main purpose of exploratory research is to gain a better insights on the situation and is used to increase an understanding of phenomenon (Johannessen, Christoffersen, & Tufte, 2010) .

When conducting a research project, a certain way of reasoning is always chosen as an underlying assumption which organizes and governs the main choices made in the study. This includes, choice of research design and strategy, adoption of method for data collection and analysis as well as interpretation and presenting of results and conclusions. The researcher has traditionally a choice between deductive and inductive way of reasoning. While deduction is the process of drawing conclusions moving from a theory to empirical observations. The induction reasoning implies that empirical observations lead a researcher to a theory (Lee & Lings, 2008) The purpose of the present study is to shed a new light on the phenomenon of ICD in Norway, by taking one Norwegian university as a case. As it was revealed in the previous chapters, this topic is rather new and yet poorly explored, especially in the context of Norway. We still know very little how IC information is disclosed by Norwegian universities. What information is disclosed and for what purposes? Who are the main stakeholders for whom this information is relevant? What are their goals, understandings, and preferences? Inductive approach seems to be more correct for the studies where there is a lack of available knowledge. Therefore, this approach deemed to be particularly relevant for the present study.

Another important choice the researcher should make is the choice of research method that is referred to techniques used to collect and interpret data (Johannessen et al., 2010).

These techniques are often referred to as quantitative and qualitative research methods. The present study is a qualitative research which intends to gain a better understanding and provide a narrative of personal experiences of the phenomenon (Johannessen et al., 2010) which is the role of ICD provided by the university to its main stakeholders .

A single case study research design has been chosen for the present study. According to Zainal (2017), the case study is an in-depth look at the data within a specific context (Zainal, 2017). Moreover, the case study is deemed relevant in answering descriptive questions that seeks for extensive and "in-dept" explanation of social phenomenon (Yin, 2014), which is in this case improved understanding on perspectives of IC users` on the topic of ICD. When designing a case study, some features must be considered. First is to define unit of inquiry or a "case" of interest (Yin, 2014). This thesis will investigate intellectual capital disclosure process and users' opinions regarding the information in the case of one Norwegian university that has been chosen based on its relevance to the research topic.

3.2 Data collection and analysis

The present research is a qualitative case study. One Norwegian university has been chosen as a case for an empirical examination. Since the topic of ICD is rather new and poorly explored topic, there is still very little research and information regarding how universities in Europe and in Norway in particular, view the role of IC disclosed to them. Therefore, the qualitative approach to data collection and analysis was deemed most relevant and able to provide deeper understanding of respondents' personal views and perceptions on the topic under consideration.

The data collection process was limited to the period from January to August 2021.The study is mainly built on a primary qualitative data obtained during the fieldwork in the case university. However, secondary sources were also used in the study. The secondary sources included information presented on the university's webpage and on the official websites of Norwegian organization related to higher education sector (e.g., NOKUT), publicly available reports, publications in media and social media. These were collected and carefully studied in order to improve the author's understanding of the subject matter of the present study. The information obtained from the secondary data was also viewed as a pre-study providing supporting materials for boosting discussions during the primary data collection. The semi-structured qualitative interviews were the main data collection method adopted in the study.

In order to arrange the interviews, a list of potential respondents has been prepared. The selection of respondents was based primarily on their belonging to one of three main categories (students, employees, or partners). The intention was to form a sample encompassing respondents with different background and characteristics. This was deemed to be useful for revealing and to include different perspective of the object of the study as well as to obtain a more holistic view. To arrange the interviews selected respondents were contacted via e-mail by sending letters requesting cooperation. The letters contained information regarding aims of the research project and the expected results. The further selection of respondents for the interviews was based on their willingness to participate. In total 10 respondents participated in the study. Table 2 gives an overview of respondents.

Table 2 The overview of respondents

Respondent's ID	Position	Language	Total duration of the interview
1	Master student	Norwegian	1:01:24 min.
2	Bachelor student	Norwegian	57:23 min.
3	PhD student	English	1:24:05 min.
4	Master student (international)	English	1:51:59 min.
5	Employee	Norwegian	1:25:50 min.
6	Employee	English	1:44:53 min.
7	Employee	Norwegian	1:18:35 min.
8	Partner	Norwegian	54:26 min.
9	Partner	Norwegian	58:49 min.
10	Partner	Norwegian	52:41 min.

The interviews were conducted either face-to-face or via video conferences. All interviews were voice recorded with the prior consent from the respondents. Written notes were also taken during the interviews, and mainly used to formulate follow-up questions during the session. Three of the interviews were conducted in English and seven in Norwegian. All interviews were transcribed soon after the interview was taken.

The interview guide for the primary data collection was developed based on the framework chosen for the study and adjusted for each group of respondents. The first part of the interview guide addressed issues relevant for the particular group of respondents. While the second part of the interview guide was similar for all three groups and was directly related to the framework of the study (Slettli & Panteleeva, 2021) . The first part of the interview guide contained the list of general topics to be discussed with respondents. These concerned their background, experiences, preferences, and perceptions regarding IC information made available to them by the university. When it comes to the group of employees, the scope of topics was expanded to reveal how employees not only perceive and deal with the IC information, but also contribute to its creation and distribution. The interview guides are presented in the appendix 1.

Soon after the data from the interviews was transcribed, this further became a subject for analysis and interpretation. The framework adopted in the study was applied to be able to organize and interpret the empirical finding obtained.

3.3 Ethical considerations and limitations of the study

The ethical issues were considered in this study as being important. Ethical obligations are perhaps to the greater extend important in the social science, because researchers delve into the lives of other people (Berg & Lune, 2012). Therefore, the ethical considerations were important for the present study since the research method adopted in the study required closer contact with respondents in order to reveal information which might be perceived as sensitive and private.

Therefore, to provide the trust and confidentiality all respondents were asked to approve for being voice-recorded prior to the interviews. In addition, all respondents were clearly informed about the purpose of the interviews and how the information will be stored, processed, and used. The respondents were able to stop the interview at any point of time and get access to the data collected with the purpose of review or remove it from the data set. While establishing the trust and openness during data collection, it was important to make sure that the study will not affect the respondents' privacy and anonymity. Therefore, only a limited information about the respondents is provided.

In addition to the ethical issues considered in the study, the limitation pertinent to the present research were also recognized. Although the use of interviews is a common approach in qualitative case studies, it was recognized that this approach is limited and unable to provide

a complete picture of all aspects within the research object. It is recognized that a more comprehensive approach could enlightened other new aspects that are not presented in the present research. For example, the use of triangulation of data collection methods by combining semi-structured interviews with direct participant observations, group interviews and more thorough documentary analysis would probably reveal other aspects of the phenomenon which are, therefore, missing in the present research (Yin, 2014).

Therefore, while recognizing the limitations of the study, I believe that this research is still able to present a particular standpoint on the subject matter which can provide interesting and valuable information and encourage other researcher to expand and improve this knowledge in further research.

Chapter 4 Empirical findings

4.1 Introduction

The present chapter introduces empirical findings from the field work that has been conducted at the case university. The purpose of the field work was to highlight the role of IC information disclosed by the case university for three groups of users as well as to explore how these groups of user's searches, use, evaluate and prioritise this information for their needs. For the purpose of the present study the intellectual capital disclosure was defined as knowledge, experience, information and intellectual material that the company could use to create monetary, utility, social and sustainable value (Dumay, 2016). To put it differently, everything that everybody knows in the organization that allows to gain a competitive advantage could be considered as intellectual capital of the organization and disclosed in order to create or increase the value of these assets (ibid).

The previous research on ICD in universities revealed a list of stakeholders that are interested in IC information (Ramírez Córcoles & Tejada Ponce, 2013). The list includes the public administration, university government, students, teaching and research staff, administration and service staff, unions, just to mention a few. For the purpose of the present study, three groups of stakeholders have been chosen for empirical investigation, which were deemed to play a considerable role for the universities. These are students, employees, and partners of the university. These groups of users were chosen as they were deemed to be able to provide both internal and external perspective on the ICD role and, therefore, more thorough grounds for description and analysis of the subject under consideration. The rest of the chapter presents results of the empirical data collection process and structured according to three perspectives employed in the study (students, employees, and partners), as well as three main groups of intellectual capital (human capital, structural capital, and relational capital), which was adopted as a theoretical frame of reference in the study as well as a framework for data collection and analysis.

4.2 The role of ICD: student perspective

This section presents a student perspective on the role of ICD in the case university. Universities produce knowledge either through the research or through teaching, therefore students are the important stakeholders for the institution. The increased mobility of the students and increased competition in the sector press universities to transmit relevant information regarding their activities, that could play an important role in decision-making

processes, such as a choice of a study place, a study program, as well as particular subjects to be taken during the study years (Ramírez et al., 2013). The information regarding students' preferences and information needs at any stage of their interaction with the university becomes an important source that the institutions are taking into account when disclosing and promoting information directed towards current and potential student mass.

To shed the light on the problem statement posed in the study, the topics discussed during the interviews elaborated on the informants` process of choosing the study place, their daily tasks, activities that are performed by the university to disclose IC information as well as information sources and channels used by the respondents.

Empirical findings showed that university`s regional, national, and international reputation is an important factor for students. Prior the study, students go through information search, evaluate, and compare several educational institutions. At this stage the university's reputation is one of the most important factors for choosing a study place. One of respondents had a criterion that university should be well known internationally, placed in the list of top hundred in the world. Another one explained that good reputation can increase chances to get the job after studies. Respondent 1 puts it this way:

> *«I know that (university's name) has a very good reputation, and that is why I chose… (it)… because it is nice to have (university's name) in my CV when I will start searching for a job…"*

It was further discovered that students draw a particular attention to the teaching management and organization. All respondents from this group were highly interested in information regarding courses that offered by the institution and evaluated them by its relevance.

The information regarding the program structure as a whole, as well as its distribution among study years and semesters, course descriptions, syllabus, workshops and other activities, type of evaluation including final exam and examination aids allowed are the issues that deserved a particular attention and affected the students' opinions and decisions. The main source for this kind of information is the university's webpage. This provides students with most of the information regarding their study, directed towards both current and potential students, and available at any time of the year. This information is updated once a year and the process are managed centralized by the university's administration.

Interestingly, the workload for the courses was also of particular importance for the students. Though, this information is not available on the university's website, this information was found to play an important role. The respondents revealed that they were trying to forecast the workload for the courses based on the information available from other sources. It was important for them to get an understanding of how difficult the course will be and how much time each course will take. This seems to be important in order to plan and organize time during the examination period. Since the information was not accessible directly, it was mostly assembled by talking to the students that took the subject previous year(s). This finding was interesting and stressed the importance of student relations.

Next, findings from interviews unveiled that graduate employability is an important element for the students. If the study program is broad, that was perceived as a potential disadvantage when applying for the positions which has specified requirements to the candidates. Respondents mentioned, they wish to have a concrete information about what type of job(s) they can apply and get after completing the study program. The overview of potential job areas and position that the study program is directed to, was found to be an important and valuable information for the students. This would be combined and supported by the information about potential employees and their geographical location was named as particular relevant. Relevant job offers and companies at the local market has been named as particularly important.

Further, the mobility of graduates was named as essential. Mobility programs for students such as Erasmus+ give students an opportunity to study abroad for periods from two to twelve months included in their bachelor or master study (European Commission, n.d.-a).

Informants have named the opportunity for the exchange as a relevant information to them. They recall that the information regarding the exchange opportunities was not so good promoted at the bachelor level, it was more attention to that during the master study. The university has made a separate exchange meeting where students could get information about how to apply.

The students need to apply for the evaluation and approvement from the home university of those subjects that they want to take during their study abroad. The application process is rather time consuming and complicated. Students themselves should find relevant courses and get them approved before they can apply. Moreover, courses should have equal number of points and they should be identical to those that they have at their program study in their home university. For instance, if their program contains courses about sustainability, they

should have the sustainability course during the exchange period. The practical information available to students is crucial at this point and depend on administrative support.

On the other hand, the academic and professional qualifications of teaching staff was named to have particular importance for students.

Respondents claimed that they examined teachers' profiles to get a better understanding of teacher professional qualifications and experiences, achievements, including scientific and practical publications, as well as personal characteristics, hobbies, interests etc. A good teacher profile was named to have a positive effect on students' decision to take a course or specialization.

Another important aspect named by the respondents from a student group was the use of social media as a communication channel for distribution of a relevant information. The students find it relevant and worthwhile to follow social media channels administered by the university. In addition to the university`s website, the students follow channels that contain information about student environment and the students' activities. Facebook accounts, arrangements, meetings, and groups are followed to stay updated about coming events, seminars as well as other news perceived relevant for respondents.

Another aspect that was found to have significant role for students is university`s information system. The empirical findings revealed that an important source of information for students is university`s official intranet. This channel was mentioned and discussed more than other sources. This was used for different purposes. Corona situation updates, facility opening hours, guidelines, instructions, regulations, recent news and updates were among them. This information channels were described as equally important and used as direct e-mail exchange, especially during the outstanding situations like Covid-19 outbreak, when good and quick information exchange was particularly important for students. The respondents stressed that in the uncertain and quickly changing situations when new information is becoming available every day, it is important to get information directly to e-mail. That will save students from searching through the social media, surfing through the internet, and looking through the newspapers. This is extremely important to avoid unnecessary stress and anxiety.

The next aspect revealed during the interview with students was the importance of scientific, cultural, and social events organized by the university. The students find this type of activities very important and highly valuable. An event that was particularly mentioned

during the interviews was a so called “The buddy week” (Fadderuka). The buddy week is an arrangement that is organized and performed by the existing students to welcome new students to the university. It consists of a series of happenings both of social and formal character. For instance, the new students can attend various social gatherings such as a breakfast at the city hall for all students, different seminars, and workshops where they receive a lot of practical information which intends to help new students to get along at a new place. The evidence obtained from the interviews shows that the connection and relations build among students during this event have significant importance for students.

The informants stressed the importance of this kind of events for students, as well as high level of interest to this kind of events. They particularly stressed the role of this event as it helps to socialize with other students, build relationships and relations, as well as to develop a feeling of connectedness to the university among students. Moreover, respondents claimed that the event helps in communication and networking among students. This further foster the feeling of belonging to the university, local community, and the region. The respondent 4 puts it this way:

> *“[...]the feeling that I am a part of a community, and I am important, and I have friends, I have connections. It's very important for every person to feel that you belong to something, and someone is interested in you like in a person. So, this gathering both formal and informal give you feelings that you belong to community.”*

While the role of relations and networking is not presented in the ICD framework adopted in the present study, this was found to be particularly important source for responds representing the student mass.

Finally, the productivity of administrative, academic, and support services was found to be an important IC source among students. Informants stressed importance of information about internal processes and students right in the university. Respondent 4 stated:

> “*[...] but for me - how studies are organized, it was very useful. And my rights-what I can use, during my everyday life, how can I communicate with professors, what I'm allowed to do here, what is forbidden for example [...]. This type of information was very useful. [...] That we, for example, can use library seven days per week, you can just use your students’ card”*

To sum up, this section outlined findings from the interviews with group of students. The intentions were to expand our understanding of the ICD role from the student perspective.

The informants elaborated on questions about their choice of study place, daily tasks connected to their study, and the source of the information they follow. The empirical findings revealed several items presented in the ICD framework adopted in the present study which play a considerable role to the student group.

The following section outlines the role of ICD from the university's employee's perspective.

4.3 The role of ICD: employee perspective

This section presents an employee perspective on the role of ICD for the case university. Respondents representing employee group are mainly involved in three main types of activities, though to a various extent: (1) teaching and supervision, (2) research and project management, and (3) administrative tasks and support.

While being the university's one of the most valuable resources, employees find themselves in a unique position. By acting as creators, providers, and distributors of IC information, they generate, organize, collect, process, and disseminate the IC information. At the same time, as some of the most interested as well as demanding users of IC disclosed by the university, they act as both consumers and mediators of IC to students, authorities, and university's current and potential partners. Thus, acting in several important roles, employees participated in the field work for this study, and provided both internal and external perspectives on the subject matter.

To get new insights into the subject matter the respondents were asked about their background and experiences, current work tasks, and projects apart and in relation to the ICD role.

Empirical evidence obtained from the interviews showed that evaluation and qualification process and activities within the institution have considerable importance for the employee. To assure the quality of the teaching, universities possess and apply different means.

Student evaluation of the courses through a 'reference group' is an example. The course coordinator has a task and responsibility to create a reference group for the course. The group should consist of at least three students that are taking a course. Their task is to collect the student opinions and feedback regarding all types of in-class and off the class activities related to the course, summarize, and communicate them to the course coordinator. When

the course is completed including the final evaluation, the reference group should provide a report which contains both students feedback collected for the whole period, students' evaluation of the course in general as well as the students' suggestions and expectation for the course development. The respondents described the reference group report as a source of information about the classes from the students` perspective. Information in reports includes students' evaluation on the progress of the subject, evaluation of exam and whether students are satisfied. The reference group reports are publicly available on the university's website. It is used to evaluate the performance of the course, identify pitfalls and challenges as well as directions for further development and improvement. Further, the reference group report is included into the course report (emnerapport). This is a course report written by the course coordinator. The aim of the course report is to provide a documented feedback and evaluation of the course which intends to be used as a basis for further development. The course reports are mandatory for all courses and are in an open access on the university's webpage. Respondents stressed that information presented in reports is useful towards gaining inspiration, ideas, and further improvements in the own courses.

From the interview with a respondent mainly involved in teaching activities, it was found that the information about organizational structure is important. The large business units like institutes or educational departments have informal sub-units unifying employees with same or related specialization or working in same or related area of interest (faggruppe). The group meetings are conducted at regular basis to discuss issues and exchange day-to-day information. Examples are feedback form the students, lecture plan, what topic need to be explained more, what topic will be cancelled, mandatory assessments and so on. There are also discussed bigger changes in the subject for the next year (emnebeskrivelse).

Employees involved in research and project activities stressed the importance of the research capacities and competences. University has many projects with the different actors representing local and regional businesses. Those projects usually involve the research staff of the institutions. Research projects with active bachelor and master students' participation are very common as well. The university is interested in increasing the collaboration with the business partner by sharing partners' experiences for the mutual benefits. Tight connections to the local business, increased participation in the research projects, and development of the collaboration with various groups of partners is considered as one of the main strategic priorities for the university. This supports the university's intention to increase its national and international recognition.

Another item important for the employees involved in research is university`s facilities and material resources available to use for research and development. The example is laboratories located in the university which are used to build the prototypes for the industry. The laboratories are described as visual playgrounds for the business where they can text new technologies and avoiding heavy and risky investments at the same time. As one of the respondents explain, they invite representatives from the business to the laboratories. These visits enhance innovative thinking from both sides (Respondents 6):

> *"[...] it actually funny observation, when the company comes to us [...] It takes, I don't know half an hour- 40 minutes, when they start completely new, in the beginning it is usually silence, and they start [...] okey, this robot its can be used in the production in this way, we can reduce very difficult work, we can replace, or we can have collaborative robot to help the human in this department."*

The scientific productivity is another factor playing an important role for the employees. In the end of the project, it is necessary to write a report or a scientific article to be published in a journal. As it was mentioned during the interviews, this is connected to the system of evaluation of the academics.

When talking about scientific productivity, respondents explained that the research projects usually have different outcomes and business and university place a value at different things at this stage. The published articles based on the results obtained from the research projects is one of the main outcomes for the university representative as it contributes to their scientific productivity. However, the business representatives are mainly interested in the practical outcomes from the project, rather than theoretical. The business is also interested in protecting these results to be able to preserve their competitive advantages.

Therefore, dissemination of results is particularly important for employees involved in research activities at the universities. The presentation of the results is an important part of the cooperation with businesses. Informants mean that finding a right way to present and disclose project ideas and results of a research project when it is completed is absolutely crucial. The presentations focus on the visualisation of the information, as for instance graphs, pictures, and videos are the examples. However, the challenge is to get a permission for the results dissemination from the industry as most of the project results could not be disclosed.

It was further found that the academic and professional qualifications of research staff is highly important to be disclosed for building fruitful long-term relationships with business partners. Collaboration with industry is initiated by the employees that have a certain attitude and understanding of how to work with companies. As interviewees explain it is not "eight-to-four work". The most important is to provide results.

While discussing the initiation of a new project and evaluating the engagement with possible participants from other institutes the writing qualification and experience was mentioned as one of the key factors for the success. It is important to know that participants in the research group share similar understandings and values, or as one of the respondents put it; "people are on the same page". Information about such soft skills is not easy to access, but it is only possible to learn about the person from previous collaboration. In addition, the rich industrial background of the employees can also indicate that the person has the set of skills relevant for working with the business. The respondent no six describes it this way:

> *"If you start a new project, and for instance, we need people like bio, for instance biology, so we know a few people from before and we sort of think of how they can contribute to our project. So sometimes it's okey if person is just academic, sometimes like this person, has a lot of industrial background, so we are on the same page"*

Further, from the administrative point of view it was found that organization of the scientific, cultural, and social events have an importance for employees. Thus, for example, university organizes various events to attract new students. There are several events organized and conducted by the university on a regular basis which targets a group of potential students. The purpose of events is to introduce the university to potential students, reveal opportunities and advantages of being a student at this university. The examples of such events are organized visits of pupils from secondary schools with an extended professional and entertaining program; web-based communication via social media such as Facebook, Instagram, various blogs, and YouTube channels made by the university including the students.

Another target group for the university is new students. The university recognized the importance of providing students with an environment not only for study and professional development, but also for socialization, networking, and increased feeling of connectedness to the university and to the region. Activities organised in relation to the "buddy week" and matriculation ceremony are examples.

Further, the use and availability of information system was found to be particularly important for the employees as well as for the students. In particular, the internal communication platform Intranet was mentioned as being highly useful and valuable information channel. It is used to disclose information towards other employees and to follow the news and updates from different sources of interest. Intranet is used for internal communication. Various type of information is published. Examples are information about activities performed by the institutions, news, reminders, and notifications, updates from rector and administration, regulations and guidelines, reports, and achievements at both individual and organizational levels. The amount of information provided via university's intranet is large and can even be perceived as overwhelming. One can find it difficult to navigate through a large number of channels and resources. However, the respondents stress that it is a very important source of IC information constantly available for the internal users like students and employees.

Other channels for the internal ICD are also available at the university and are used to a various extent. Examples are Teams, as well as other digital tool available for students and employees. Respondents described that there are many Teams channels, that are divided based on the purposes and target groups. For instance, matriculating and "buddy week" have own Teams groups which are used for communication and information exchange. Participants use Teams to cooperate, store files and hold meetings.

The evidence from interviews showed, that employees place a high importance on sharing of internal information to other employees in the organization. When information is disclosed to wider audience, the knowledge of the internal processes is shared to all and not anymore bunded to the specific people. Thus, if a person is no longer involved, the knowledge remains within the organization and can be used, which is preventing the organization of being vulnerable. As respondent 5 have explained:

> *"I believe that it is very important. In such a big organization, there are many people who have very different tasks and if someone is for example is sick, then someone else can replace him… and it is important that all information is available to all, it means that another person can have a look at it and see, oh yes, this is how they do it… or ok, this is how this is supposed to be done… Anyway, it is much easier to communicate things that are few people actually working with or have knowledge about it. … So, it is very important actually, that the communication is open…. Share information…."*

The organization structure is important. It facilitates communication and information flow if clear communication lines are easily identified.

One of the respondents describe it as working in silos. The internal communication can easy be closed in the silos if employees are placed in the organizational structure so that they are not at the right place regarding communication flow. Belonging to the "wrong" division places one outside of the communication loop. It prevents getting information that is relevant and necessary to perform the working tasks. Therefore, it is important to have contact with the "right" people in the organization, those who have relevant information. The respondent 5 puts it this way:

> *"so, if you are in a wrong place in the organization, then… you don't get information at all. You don't have enough information and it becomes difficult to perform your tasks… and this rises irritation between the colleagues…"*

Finally, findings from the interviews unveiled that student satisfaction is an important factor for the employees. The respondents are familiar with the annual student survey and the results of that are followed by them. However, there are different perspectives how the results should be understood and used. Looking at the same numbers one perceives them as bad while others feel these are satisfying. In any case, this indicator was described as important to be disclosed.

To sum up, the section presented the employees' perspective on the ICD by the case university. The findings showed that the information dissemination via intranet and social media, ICT and information systems adopted in the university, evaluation and qualification processes and activities, organization of events, research capacities and competencies are the items to be particularly important for this group of users.

The following section outlines the role of ICD from the perspective of current and potential partners of the university.

4.4 The role of ICD: partner perspective

This section presents a partner perspective on the role of ICD for the case university. The higher education system reform which involves among other things, adoption of NPM concept to public universities, pushes educational institutions to make efforts towards rising external funds such as grants and participation in national and international research projects. In this regards, the university's business partners become one of the most important and valuable stakeholders. To be able to build and maintain connection and relation with the most valuable partners as well as to attract the new ones, the universities are interested to disclose the IC. This information can reveal the information regarding the university's competitive advantage and contribute to constructing a positive and attractive image and reputation. To achieve this goal, the university needs a better understanding of their current and potential partner's needs, and expectations to the IC disclosed to them. Therefore, the field work of this study intended to highlight those areas that the respondents perceive as important for them.

Findings from the interviews revealed that respondents from a partner group recognize that universities possess a set of competences that are important for the business. The industry is therefore highly motivated to cooperate with regards to get access to the competences the university possess. Moreover, the collaboration with universities helps industrial partners to decrease the risks of negative project outcomes, lower the project costs using tangible and intangible resources the university has. This was described by the respondents as a "win-win" situation where both parts can benefit. If the project involves students, it might be beneficial for the students as well, since they get knowledge and prospects to the potential jobs and companies. When it comes to companies involved in the project, they receive the opportunity to carry out high risk projects that otherwise might not to be initiated. In the case of university, the project brings external funding, relevance to the job market, networking, image, and reputation. Respondent 10 puts it this way:

> *"It is… this is actually about motivation when it comes to decision to cooperate with the university. This is in a way an access to the resources which cost something for us, but it doesn't cost us as much as it would be if we have to use resources to run the project ourselves… if we have to hire an employee to carry out a project and the outcomes and results of this project are unclear and have a very high-risk level… So, this is why, it is very important for that vi have this opportunity... (to cooperate with*

the university on this project). Because if we had to take all the costs and all risks, we would probably never go for it… It would be too expensive for us"

The evidence obtained from the interviews showed that partner appreciate the IC information disclosed to them by the university. The dissemination of results was found to be an important item to be disclosed for the partner group. While discussing this point respondents stated that they do pay close attention to the results of the research projects. However, they are not interested in reading long theoretical papers and learn theories that lead to the results. It is much more important for them to come quickly to the main point. It was mentioned that the visual presentation is important as well. Respondent 8 described it as follows:

"..but as I see it we are not interested in reading theoretical papers. We are used to get …a catchy presentation or may be something in a way the consultants do in their reports, for example in PWC when they use a lot of fancy diagrams and infographics and the most important when they get to the point quickly. Otherwise, we don't have time to read a lot of theories about why this is so…we want to know what is it for us and we want to get it fast..."

The findings from interviews further revealed that university partners place a high level of importance on the personal contacts they have within the university. It was eliminated that companies have usually one contact person from the university that have insights to the internal opportunities and is familiar with the needs of the company. While having a knowledge of internal processes of the university this contact person usually finds the relevant employees, or students for the project and propose new topics for the collaboration. Respondent 10 describe it as follows:

"*it is probably […] the most important her is that we have a constant dialog with a person at [the university],. It is not like we are walking from university to university in order to find someone who will provide us with what we are looking for… The point is that we already have a contact person who we are in contact with from before, so…"*

It is important to mention, that the ICD framework applied in this study do not have such an item as "personal contacts". This type of information in itself, is very difficult to identify, map and disclose, though it was found to be of great importance for the one of the most important group of stakeholders for the university.

Further, empirical data revealed that consistency in the personal relations have a significant importance to the partners. This item is not presented in the ICD framework either. However,

the empirical data revealed its considerable importance for the respondents. One of the respondents explained that it is important that the contact person at the university has been in contact with the company for a longer period. It means that he or she is familiar with the company and have a good understanding of the company needs. The respondent 10 puts it this way:

> *"I think it would be much, much more difficult if we, in a way, every year had to meet new person at the university… and learn how to communicate…this is obvious I think… this is boring in a way to explain all our needs again… this would be too complicated for us…"*

Further, it was found that appropriateness of research and its results is important. Students and business collaborate trough small project led by university and the firm together. In such project's students get the problem proposed by the company, which they work towards to solve. The problems spring from the "real life" issues that the firm would like to throw light on. To obtain the appropriateness of research, the industry is navigating the project by the meetings and dialog with the students. In this regards the close dialog between students, company and university is highly important.

To sum up, the section presented the partners' perspective on the ICD by the case university. The respondents have elaborated on the motivation towards cooperation with the university and the projects that they were involved in. Empirical data revealed that companies usually have a contact person within the institution, who has an insight into the university internal operations. The personal contact and the consistency in the relations are not mentioned by the ICD framework, but importance of those is supported by the data obtained from interviews.

In the following sections the role of particular type of IC (human capital, structural capital, and relational capital) is outlined.

4.5 The IC role

This section presents the evidence obtained from the empirical study regarding the role particular type of IC (human capital, structural capital, and relational capital) plays for the users.

4.5.1 The role of human capital

The human capital of the university encompasses the explicit and tacit knowledge, skills and experiences of HEI staff (teachers, researchers, managers, administrators and service staff) that are owned and used by them, as well as the result of knowledge work (Ramírez et al., 2017) .

Empirical findings showed that teaching capabilities and competencies were of particular interest for students. Respondents describe teacher`s capabilities to teach as an important factor as this affects students' decision to take courses or programs. The good communication skills and ability to build relationship with students appears to be an important driver for students to take or drop the course in general and to attend or skip the lectures. If the knowledge capability of the teacher is perceived as poor, this results in lower motivation to attend the classes. Respondent 1 states:

> *"[…] when the lecture and the teacher is simply bad, I feel it is a waste of time for me to meet up […] I could rather use this time to read it myself"*

Respondents also mentioned the quality of teaching as one of criteria's, when choosing what subject to attend next semester.

> *"[...] let's talk about one of the subjects and I had that Professor [...]in previous semester. And it was [...]very simple to communicate with him, [...] it was simple to follow his lectures and I knew that he would help me if I don't understand something. He is very open, and not very strict."*

Another factor that was brought up by respondents is how lectures are organized. For instance, when teacher goes step by step solving the task, this is usually perceived as positive. Negative experience was when teaching methods put a pressure on students or place them in a vulnerable position when they were risking appearing incompetent in front of other students. Respondent 4 describes it as follows:

> "*I had a professor in one of the subjects and he wanted us to be prepared in advance for all lectures, so we had to go through all the old material before lectures, and he started with quizzes […], so it was the beginning of the lecture, and it pressed me. For example, if I didn't have an opportunity to be prepared for this lecture, I would say that I would skip it. I don't want to be like, how is say... shame? […] . But if I'm not prepared now and he presses me in the room, among other students it's a shame and I don't want to feel that "*

Further, the efficiency of human capital combined with research capacities and competences was named as an important information for employees. Background and previous experiences were described as valuable source of information to be at hand. In a rapidly changing working and business environment the information gained and stored by the employees in a form of tacit and explicit knowledge increasing in value.

Therefore, when there is no updated information, the knowledge from the previous experiences that are bunded to the certain people in organization is used to evaluate the situation and make a decision. Respondent 5 described a situation when it was decided to keep an event and continue with it in following years even though it was unsuccessful that year. This decision was based on the experience collected and stored as a tacit knowledge of the employees.

> *"Well, the society we are a part on right now is changing so quickly that if you buy a research which was conducted in 2020, this can be already perceived as old in 2021 […] so we anyway try to work on it.. […] we still try to develop it and extract the information but relate it to our intuition and understandings…one can still use these researches as a basis anyway, […] but we cannot rely on it for 100%*"

It was further discovered from the empirical data that efficiency of human capital as well as competences, professional qualifications, and achievements to be disclosed have a significant importance for partners of the university, as these contribute to the maintenance of exciting cooperation and provide a solid base for its development and expansion.

As it was mentioned before, the business partners have certain people at the university which they are in contact with. It is important that these employees keep themselves engaged and regularly obtain an updated information about local companies and have knowledge about the company's' needs. Respondent 10 states:

> *"I think it is actually people from the university who initiate the cooperation and keep themselves informed..."*

Thus, the section outlined the items related to the human capital which are important for the respondents. These are: teaching and research capacities and competences, teaching quality, efficiency of human capital, as well as engagement in maintaining relations with the local business.

The following section presents findings obtained regarding the structural capital.

4.5.2 The role of structural capital

To outline the structural capital in the case university this study adopts the definition of Ramirez et.al. (2017), which defines structural capital as the explicit knowledge related to the internal process of dissemination, communication and management of the scientific and technical knowledge at the university (Ramírez et al., 2017).

The items such as organizational structure and productivity of administrative, academic and support services of the university presented in the ICD framework adopted in the study was found to be important for employees. Clear organizational structure makes it easier to navigate through the information available in order to find relevant information quickly at the time it is needed. However, that was particularly stressed by the employees that a tacit knowledge and personal contacts within the organization provide a considerable support as well.

The teaching management and organization was further found to be important. As an example, respondents from a student group described the experience of having guest lectures in the courses he attended. The guest lecturers, especially given by the business representatives provide students with another view on the theoretical part of the course that they have already learned. Respondent 4 states:

> *"So these guest lectures, give you an understanding how this theory works in real life […] we have, for example a plan, or scheme, how we can cut the costs, but its[…] just a theory […] But when I see the person who came from industry and he tells that yes we did these, these and these and it works very well […] than you see that your knowledge is not just dry theory, that you will apply this in the future, whether for example, you apply for jobs"*

Further, as it was mentioned before, the data extracted from interviews shows that scientific productivity for the group employee is connected to evaluation of academics. Writing articles and publishing in the journals is something researchers must, due to the evaluation system. However, the respondents stated that to deliver applicable results to the industry is more important.

> *"The person who is only in academic word... for them, it's usually all about delivering the reports, mainly writing papers, because this is not the academic fault, but it's the system which is, which evaluates and allowed to build carry on the terms of publishing, not the way you deliver to industry*."

Technological capacity, facilities, and information system available is particularly important for students. The role of technologies and ICT grows in the last decades and especially during the Covid-19 outbreak, when all teaching, research and administrative tasks were performed digitally. The employees involved in teaching and student supervision obtained both positive and negative experiences when trying to use new and varying digital tools to be able to adapt to a new teaching and learning environment. After all, both negative and positive experiences obtained were transferred into a valuable knowledge accumulated and secured in the case university.

The facilities and material resources for research and development play a much more important role to employees involved in research and project management. The quick adoption of new technologies and competencies is an inherent process for companies operating in a highly competitive environment. Therefore, to cooperate and carry out projects with partners from business, the university needs facilities and material resources providing necessary technological level. This includes equipment, ICT, software etc. Respondent 6 states:

> *"But now, with this laboratory which is equipped with this high […] technology. Now we think that we will collaborate, in order to be able to develop all our knowledge, we cannot start from the scratch, we have to start at some pretty high level, to keep going to continue to develop new knowledge"*

Connected to the previous item, the research group capacity was found to be important. The complex problems that the companies face during their everyday activities can only be solved by active collaboration and bringing together competences under one research group. Therefore, the interdisciplinary internal collaboration is a form for the collaboration that brings different competences and different perspectives on the problem. Respondent 6 puts it this way:

> *"we were […] actively involving people from other departments. […] because all the problems in industry, they are complex, and you cannot solve complex with just one competence. so you […] have to have all these different perspectives."*

Furthermore, teaching management and organization is an important item of the ICD framework which was discussed during the interviews. In organizing the subjects, the parts of the courses are outsourced to the business partners, that have more competence at the area then university. As respondent 6 stated:

"We actually involve this supplier very actively in education. So, they run I don't know […] very high percentage actually in some courses […] we educate probably theoretical part and physical part in terms of how far our competence goes, but this companies which are very innovative and have this technology, which is kind of new in Norway, so they teach our students …"

Next, management quality was discussed as an important item of the ICD framework. The working tasks should be well defined and managed. As respondents explain, without this defined boundaries, one can take many tasks and end up with too much work. This item is connected to information system available at the university which is disclosed by well documented processes, databases, and ICT at hand.

Finally, evidence obtained from the interviews with the respondents from the group partners shows that research management and organization is important to the group. Projects starts from the problem initiation and finding students that will work with the project. Moreover, it is important that students have access to the resources within the company and they can ask question and get information that are needed for successful projects. Furthermore, there is a communication during the cooperation, so the company can navigate the research towards solving the problem that is interesting for the company. That implies that university and the company have open communication channel and have regularly meeting.

Thus, the section outlined the items related to the structural capital which are important for the respondents. Facilities supporting research, organizational structure, research group capacity, quality teaching management and organization, and informational system were discussed.

The following section presents findings obtained regarding the relational capital.

4.5.3 The role of relational capital

The relational capital of the university encompasses collection of economic, political and institutional relations developed and upheld between the university and its non-academic partners, such as enterprises, non-profit organizations, local government and society in general (Nicolo' et al., 2020) .

Collaboration and cooperation with other HEIs were discussed during the interviews. Students view this information as important and valuable for them. During the study students are involved in group projects with students from other universities. The lecturer created

groups of students from two different universities to work towards solving an issue. This type of collaboration gave an opportunity to compare the knowledge that students have got in their university and the knowledge of the students from other university. The respondents have learned that students from the same discipline but from different universities can have different kind of knowledge. Respondent 4 puts it this way:

> *"[…] we have different knowledge. Absolutely. It was so amazing to understand this that we are students in the economy, for example, but we have different knowledge and, like, different strengths and weaknesses"*

Next, environmental responsibility was found to be important for students. Respondents from student group stressed that it is important that university continue to educate students on environmental and sustainability subjects.

Relations with business world was one of the items most often mentioned during the interviews. Contact with businesses and future employability are of particular importance for students. The students would like to have more information about local companies and what kind of jobs are relevant and available to them. This has a direct connection to their future employability.

At the same time, employees revealed that relations with business world is important considering enhancing the collaboration with existing firms and to find new business partners. Cooperation has many benefits for the university, and the direct financial income is among them.

Another item revealed from the interviews was application and dissemination of results which have a significant importance to the employees. This was discussed in relation to the ongoing projects the university executes. The projects are usually initiated based on company needs. To maintain and develop relationship with companies, university should deliver applicable results, in correspondence to the needs of the industry**.** Respondent 6 states:

> *"If the project is not relevant, […]if it is not an answer the company's need. So then, we lose the company."*

To satisfy the needs of the industry and deliver applicable result it seems important that the company is involved during the whole project to navigate and gain a new knowledge that is

developed during the project. Respondents revealed that companies should dedicate resources to collaborate with the university and have same understanding and values.

The relations with students were found to be important as well. Respondents from the employee group discuss the importance of students having physical encounters with the business world, such as visits to the company facilities. It is motivating and inspiring experience for the students. Respondent 6 puts it this way:

> *"...and they got also excursions in [company] [...] for students is unforgettable experience to do something like this [...] so many students haven't been involved. Not just involved in projects with industry, but never been in company. So, I think it's something we have to work on, actually"*

In line with guest lectures carried out by the industry representatives, the company visits boost the students inspire and motivate them. Respondents 6 states:

> *"this is the way and of course it's motivation, inspiration for students. And eye opening, because this people not only are theoretical, they do working like in space. So, yeah, and they have examples like of their work there, you know, and ..so it's pretty inspiring"*

Empirical findings showed that regional development is an important topic for partners. Respondents acknowledge that local industry facing high competition. To maintain the best position in the market, they need to develop their competences. It is, therefore, important to secure the competences which are available in the region. The university is able to take an active part in this process by providing courses, tailored to meet the needs of industry and focus on the development of particular competences. In this way the local industry will be able to keep up with the competition, and region will remain its competitive position to be recognized worldwide.

In this section the role of relational capital was outlined. The relational capital is perhaps the most difficult to indicate, but not least important. The following items relevant to relational capital were found to be important. These are: relations with business world, relations with students, application and dissemination of results, collaboration with other HEIs.

The following chapter presents a discussion and draw conclusions based on the empirical findings presented above.

Chapter 5 Discussion and conclusion

The chapter presents main empirical findings of the study in the light of ICD framework and three perspectives adopted in the study (students, employees, and partners). Main conclusions and suggestions for further research are presented as well.

5.1 Discussion

The purpose of this study was to gain a deeper understanding of the ICD in the context of one Norwegian university. Moreover, three perspectives were applied to consider the subject matter (students, employees, and partners).

In doing so, the study has adopted a framework for ICD (Ramírez et al., 2017; Slettli & Panteleeva, 2021), which was previously used to study ICD in Spanish universities (Ramírez-Córcoles & Manzaneque-Lizano, 2015; Ramírez et al., 2013). The framework consists of three main blocks: human capital, structural capital, and relational capital, and encompasses in total 42 items. Table 3 summarizes empirical findings presented in chapter 4 and organize these according to three perspectives adopted in the study.

Table 3 Students`, Employees` and Partners` perspectives on ICD

	Students	Employees	Partners
Human capital	**(1) Students` perspective on HC** HC2; HC6; HC8;	**(2) Employees` perspective on HC** HC2; HC4; HC7; HC9; HC10	**(3) Partners` perspective on HC** HC7; HC9
Structural capital	**(4) Students` perspective on SC** SC5; SC7; SC8; SC13	**(5) Employees` perspective on SC** SC2; SC3; SC4; SC5; SC7; SC11; SC12; SC13	**(6) Partners` perspective on SC** SC6
Relational capital	**(7) Students` perspective on RC** RC3; RC5; RC11; RC14; RC16	**(8) Employees` perspective on RC** RC2; RC4; RC5; RC7	**(9) Partners` perspective on RC** RC7; RC15

5.1.1 Users` perspective on human capital

In total, 7 items of human capital out of 12 were mentioned by the respondents.

(1) Students` perspective on HC

The study has discovered that for the group student following three items of HC have some particular value. The group student examined teachers` profiles with regards to get an overall understanding about the professional and personal characteristics of a teacher, which corresponds with the item HC2 "Academic and professional qualifications of teaching and research staff".

Next, students are interested in the "Mobility of graduates" (HC6), however, the application process is complicated, therefore, this item was discussed in relation to the administrative support from the university.

Finally, students stressed the importance of HC8 item – "Teaching capacities and competences". Good communication skills and relation building ability of the teaching staff affects students` decision for choosing the course, and is a motivating factor for whether to attend or to skip lectures. Further, teaching methods were mentioned as facilitators for positive or negative lectures experience.

These findings partly corresponds with the results obtained from the study of the IC information preferences among Czech students (Kuralová & Margarisová, 2016). A part of the items of the human capital block, that reported to be of high interest to students were attached to the staff qualifications, "Professional titles", and "Highest achievements of qualifications of employees" (Kuralová & Margarisová, 2016).

Moreover, findings from this study are also supported by the results from the study ICD in context of Norwegian university (Panteleeva & Slettli, 2021). The study reported that students gave highest value to item "Teaching capacities and competences" and relatively high value to the "Academic and professional qualifications of teaching and research staff" (Panteleeva & Slettli, 2021). However, the item "Professional qualifications of administration and service staff" which reached a high level of interest in the study, was not discussed by respondents.

(2) Employees` perspective on HC

Five items of the HC were found to be important to the group employee. HC2 "Academic and professional qualifications of teaching and research staff" was discussed in connection

with the university`s collaboration with businesses. The employees' attitude and understanding of how to work with business enable development of relations with business partners. This information regarding professional qualifications and experience is also valuable during the initiation of internal collaboration on the projects.

Next item of HC that has an importance to the group is HC4 "Scientific productivity". The study revealed that publishing of the articles based on the research results obtained from the projects with the business is important and is a rather mandatory task connected to the evaluation of the academics.

Further, findings highlighted that HC7 "Efficiency of human capital" as employees background and knowledge from previous experiences plays a significant role in the decision making. Especially, when no updated information is available, the decisions are taken based on the background and previous experiences of employees.

The study has also revealed that the university seems interested in an increased number of projects involving both research staff and students. Thus, item HC9 "Research capacities and competences" seems important to employee group.

The last HC item that is important to the group employee is HC10 "Research group capacity". This study has emphasized this item in the correspondence with the problem-solving capacity of the group. Being able to solve complex problems that business is facing, it is important to create multidisciplinary research groups including different competences and providing different perspective on the problem.

The findings presented above were supported by the previous research. For example, in the study of Norwegian universities, employees placed a highest relevance on the items "Scientific productivity" (HC4) and "Research capacities and competences" (HC9). Further the group considered item "Research group capacity" (HC10) as relevant for disclosure (Panteleeva & Slettli, 2021).

(3) Partners` perspective on HC

From the perspective of partners`, the study has found two categories of HC to be important. HC7 "Efficiency of human capital" belonging to the university plays a role in the maintenance of the existing relations between the company and the university as well as facilitator of its development.

The study has also discovered that HC9 "Research capacities and competences" is important to partners. It is essential that university`s employees who are involved in the

cooperation with business are engaged with the local industry and have updated knowledge about the company needs and the local business in general.

The study in the context of Spanish universities has embraced internal and external stakeholders of the universities (Ramírez-Córcoles & Manzaneque-Lizano, 2015) . Among external users are business partners of the universities. The study provided an aggregated result for all three group of users, but it is still possible to draw the line to the analysis of the group partner in this study, since this group is also included in the Spanish respondent's sample. According to that research, respondents attributed a great importance to among others, HC element such as "Research capacities and competences" (Ramírez-Córcoles & Manzaneque-Lizano, 2015) , which supports this research.

5.1.2 Users` perspective on structural capital

The structural capital was found to be presented by the highest number of items mentioned during the interviews compared to human and relational capitals. In total, ten items were discussed.

(4) Students` perspective on SC

The study has revealed that SC5 "Teaching management and organization" in form of guest lectures held by representatives from the business have an important role to the student group. From the guest lectures, students get a practical view on the theoretical part of the subject.

Further, "Organization of social events" (SC7) by the university assists to develop networking among the students and facilitate the feeling of belonging to a bigger community.

The students placed an importance on the item SC8 "Productivity of administrative, academic, and support services", which provide students with practical information regarding university`s internal processes and the students' rights.

Finally, the item "Technological capacity" of the university (SC13) was mentioned. The accumulated knowledge during the outbreak of Corona regarding how to use the digital tools, can eventually have a value in the future, since the world is generally moving towards further digitalization.

The present study is to some extent corresponding with the findings from previous research. Previous research revealed that Czech students attribute the high level of importance for level of information and communication services and availability of information infrastructure at university (ICT) benchmarking and external review of the quality of education (Kuralová & Margarisová, 2016). Norwegian students attributed highest level of importance to "Effort in innovation and improvement", "Evaluation and qualification processes and activities within the institution" as well as "Information system" and "Technological capacity". If importance of "Technological capacity" supports previous studies, "Teaching management and organization" and "Organization of scientific, cultural and social events" is not presented in previous research. However, events organised by the university enhance the students network development. The relations and relationships among students were further found as an important item that is not presented in the chosen for analysis framework.

(5) Employees` perspective on SC

The study revealed that SC2 "Facilities and material resources for research and development" is important for the group employee when it comes to cooperation with partners from businesses. The operation at the high technological level as well as facilities for research and innovation are an inherent attribute of cooperation with business which university should be able to apply and use.

Next, student evaluation through a "reference group" reports give insight into student perspective for the quality of the subject. The course evaluation in the form of reports written by the course coordinator, and available through the university`s webpage is used as a basis for further improvement of the course and also to gain an inspiration for own subject organization. This is related to the item SC3 "University`s evaluation and qualification processes and activities".

The item SC4 "Organization structure" was found to be important for the employees. The university has a comprehensive organizational structure, which makes decision making process complicated and consisting of several steps. Therefore, a clear line of responsibilities as well as information flows becomes particularly important in order to organize the everyday tasks and responsibilities.

Further, item SC5 "Teaching management and organization" considered by this research to be important to the group employee. This implies organization of guest lectures as well as various social events with its aim to promote the university at local, national, and

international level. The events are also organized for the students which have just enrolled into the university to foster a network building among them. That is corresponding with the item SC7 “Organization of scientific, cultural and social events” in the framework. Moreover, “Management quality” (SC11) is connected to the well-defined boundaries for working tasks, as it was found in this study.

The analysis has showed that item SC12 “Information system” plays a significant role to the group employee. Respondents particularly stressed the importance of sharing information internally in order to make the knowledge available for the employees when it is needed.

Finally, the item SC 13 “Technological capacity” is an important item for the group both for communication and work performance. Intranet is an important channel of internal information dissemination. The information is both published and followed by the employees. Another channel is Teams, where employees communicate, store files, and hold meetings.

The findings in this study are to some extend contrary to the previous research. Internal users in the context of Norwegian university assigned highest values to items *“*Facilities and material resources for research and development” and “Organizational culture and values” (Panteleeva & Slettli, 2021). This study has revealed a greater number of components of the SC that employees find important for various reasons. However, in this thesis item “Organizational culture and values” was not mentioned by the respondents.

(6) Partners` perspective on SC

The university partner has mentioned only one item from the structural capital block, which is SC6 “Research management and organization”. To be able to collaborate effectively and navigate the project as preferable by the companies` results, a two-ways communication, regular meeting, and access to information are important factors.

These results are partly corresponding with the opinions of Spanish stakeholders, who showed highest interest in the “Effort in innovation and improvement (SC10), “Intellectual property” (SC14), but also for “Research management and organization” (SC6) (Ramírez-Córcoles & Manzaneque-Lizano, 2015). However, the study shows the aggregated results for both external and internal stakeholders’ opinions.

5.1.3 Users` perspective on relational capital

In total, nine items out of 16 pertinent to relational capital were mentioned by the respondents.

(7) Students` perspective on RC

RC3 "Graduate employability" was found to be an important factor for students. Respondents from this group demand the information regarding potential job areas and opportunities, and especially, at the local work market. As study has revealed, the item "Relation with business world" (RC5) is also important to this group and is corresponding to the future employability of the graduates.

Further, according to the research, the item RC11 "University`s collaboration with other HEIs" plays a role for the students. Student projects in collaboration with students from other universities gave an opportunity to compare the knowledge gained in the university with the knowledge that other students acquired in other educational institution.

Moreover, prior the study, students search information, evaluate, and compare several educational institutions. At this stage, the university's reputation is one of the most important factors for choosing a study place. This corresponds with item RC14 "HEI`s regional, national and international reputation". In addition, the good reputation of the university perceived by the students as a factor enhancing their chances to get a better job after studies.

Finally, the item RC16 "Environmental responsibility" was found to be important and should have large place in the education process as a whole.

It is in line with the evidences obtained from the study among Spanish students, who have assigned high scores to the element connected to the future employability as "Cooperation with employers" and international reputation as "International ratings"(Kuralová & Margarisová, 2016). The study in the context of Norwegian universities supports results of this thesis for items "Relation with the business world", "Environmental responsibility" and "Graduate employability" that has gained high values from Norwegian students (Panteleeva & Slettli, 2021). But in contrary, item "Student satisfaction" which was attributed highest value by students in the previous study (Panteleeva & Slettli, 2021), did not find support in this research.

(8) Employees` perspective on RC

The "Student satisfaction" (RC2) item was widely discussed by the employees, and in relation to the results obtained from the national student survey – Study Barometer. Further, the item, "Relations with the students" (RC4) was described in terms of organizing physical encounters with the business world towards motivate and inspire students. It was found that the university is interested to increase the collaboration with business community as it sees many benefits, including direct financial income. Thus, the item "Relation with the business world" (RC5) is important for the employees.

Finally, the item "Application and dissemination of results" (RC7) was discussed. It is expected that the projects results meet the needs of the partner company, to achieve that the company should be involved in the project from beginning and dedicate resources to navigate the course of project. Therefore, dissemination of results to the business during projects is an important part of the collaboration process.

The findings are in the line with the results obtained in the study of Norwegian universities, where the group employee attributed high relevance to the information regarding "application and dissemination of results" (RC7) and "student satisfaction" (RC2) (Panteleeva & Slettli, 2021). However, this study has strongly emphasised importance of the development of strong relations with the industry with support from both appropriateness of research results and the dissemination of the results that are directed to solve and satisfy the needs of the companies.

(9) Partners` perspective on RC

The university partners emphasized two items pertinent to relational capital. The first one is RC7 "Application and dissemination of results". The respondents rather valued appropriateness of achieved results and how these are communicated to them. At the same time, the internal dissemination is much more important than publication in the open access.

The second item is RC 15 "Social engagement and regional development". In order to stay competitive in the highly competitive market, local companies should update and acquire the necessary competence. The university is viewed as the one able to provide the local business with tailored and relevant knowledge.

Similarly, the internal and external users of the information in the context of Spanish universities place the importance to many elements of the RC, "Aapplication and

dissemination of research (RC7) is one of them (Ramírez-Córcoles & Manzaneque-Lizano, 2015).

5.1.4 Items not presented in the ICD framework

In addition to the items discussed in the previous section, the study revealed new items which are not presented in the framework adopted in this study.

These items are: (1) relations and networking among the students (emphasized by the students), (2) personal contacts (emphasized by the partners) and (3) consistency in the personal relations (emphasized by the partners). The items and their corresponding descriptions are presented in Table 4.

Table 4 Items not included into the framework

Relations and networking among the students	ICD student	Co-students used as a source of information in various situations.
Personal contacts	ICD Partner	Companies usually have one contact person in the university that have insights of the internal opportunities in the university and knowledge of the company needs. The contacts and relation with the contact person plays a significant role to the partners.
Consistency in the personal relations	ICD Partner	It is important that the contact person has knowledge and understanding for the company needs. That is achieved by long period of collaboration between the contact person and the company.

Thus, three more items which are not presented in the framework, were emphasized by the respondents as playing a particular important role for them when collecting and mapping IC information as well as when evaluating information and taking final decisions. It is not clear whether and how this information might be included into a formal ICD framework. However, it might be an interesting topic for further research.

5.2 Conclusion and implications

The purpose of the present study was to get a better understanding of ICD in higher education sector. As for today, this topic gains more and more attention among researcher around the world (Ndou et al., 2018; Nicolo' et al., 2020; Sangiorgi & Siboni, 2017). The present study attempted to explore the ICD in the context of one Norwegian university. Even though, there is a large number of research in this field, the context of Norway is still poorly explored. Therefore, it was interesting to look at how this worldwide trend presented in Norwegian universities. The study was inspired by previous research (Kuralová & Margarisová, 2016; Panteleeva & Slettli, 2021; Ramírez-Córcoles & Manzaneque-Lizano, 2015). However, the intention was to have a closer look at the subject matter under consideration. Therefore, a qualitative research strategy has been applied. Moreover, the study adopts three different perspectives, which represent three different groups of users of IC information (students, employees, and partners). The intention was to get a more comprehensive picture of the phenomenon at hand. The ICD framework (Ramírez et al., 2017; Slettli & Panteleeva, 2021) consisting of 42 items divided into three blocks (human capital, structural capital, and relational capital) was applied to be able to structure data collection and analysis. The empirical results revealed a large number of items presented in the framework considered to be important for the ICD users. The items mentioned by each group varies. The summarized results are presented in table 3. Besides, the study revealed three additional items which were mentioned by the respondents as important. However, these were found to be laying outside the scope of the ICD framework adopted in the present study. These items are presented in table 4.

Thus, the results of the study might be of interest for the scholars working in the field of IC and ICD in the higher education sector. At the same time, the results might be of interest for different groups of stakeholders of the university, not only in Norway, but in other countries all over the world.

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Appendices

Appendix 1 Interview guides

Interview guide (group student)

1. What is your study program? how many years you are in [*the university*]?
2. Before you became a student, where you were looking for information to choose the institute to study?
3. How did learned about [*the university*]?
4. When you were choosing the study place, what was criteria were important for you? Why these criteria were important.
5. Are you familiar with activities university perform to disclose information (reference to communication division)?
   Do you follow it? How?
6. Do you follow, share [*the university*] news information?
   What information? Via what channels? To whom?
7. Do you follow information about [*the university*]?
   What information do you follow?
8. Follow up questions from the ICD framework: Ask directly if respondents are interested in information about human, structural, relational capitals. Is she/he use it? If yes, how?

Interview guide (group employee)

Common start for all:

1. You are a … (position) at [*the university*]? *Get confirmation*.
   How long have you been working here? Is this the position you had from the beginning?
   Did you have other positions at [*the university*]? What did you do before you started at [*the university*]?
2. Work tasks. Can you tell what are your main tasks and responsibilities at [*the university*]?

Administrative staff:

a. What information they disclose?
b. How (through what channels)? How often (get a yearly timetable if possible)?
c. How they search, collect, choose, decide on what information to disclose, when and how? Who is involved, responsible?
d. Do they review, evaluate the outcomes of the information published? How? How often? Does this evaluation further used for the next year f. ex.?
e. Do they accumulate and report the results? Is it possible to trace changes over time?
g. Do the compare themselves to other universities?
   In Norway, Europe, worldwide?

h. Follow up questions from the ICD framework (if necessary): Ask directly if they are interested in information about human, structural, relational capitals. Do they use it? If yes, how?

Research staff:

a. Is [*the university*] interested to increase collaboration with external partners?
What are the reasons, benefits for [*the university*]? For other partners?
b. What are the possible ways to increase, boost this collaboration?
What do they do for it? How?
c. Does the [*the university*] image\information an important factor for increasing collaboration?
d. What is important (what information) to attract and retain collaboration?
e. Do you think this information is now available?
f. Where do you personally get the information when you need it?
g. How do you think what information is lacking at the official sources?
h. What information is important for outside users?
What are they most interested in? How do they get it when need it?
i. Do you know how these questions are solved in other universes?

I. If you need to present information partners or colleagues etc. how do you do this? Through what channels?

II. Do you familiar with activities university perform to disclose information? Is it useful to you? How?

III. Follow up questions from the ICD framework (if necessary): Ask directly if they are interested in information about human, structural, relational capitals. Do they use it? If yes, how?

Teaching staff:

a. Do you disclose publicly any information about your work? For what reason?
b. Is your [*the university*] profile updated?
How often? What information is there? If yes\no, why?
c. Do you use your social networks profiles to publish information about work? If yes\no, why?
d. What information do you disclose\ do you think you should disclose?
e. Do you think it is important? If yes\no, why?
f. Are you familiar with activities university perform to disclose information (reference to communication division)? Do you follow it? How?
g. Do you follow information about [*the university*]?
What information do you follow?

II. Follow up questions from the ICD framework: Ask directly if she/he is interested in information about human, structural, relational capitals. Does she/he use it? If yes, how?

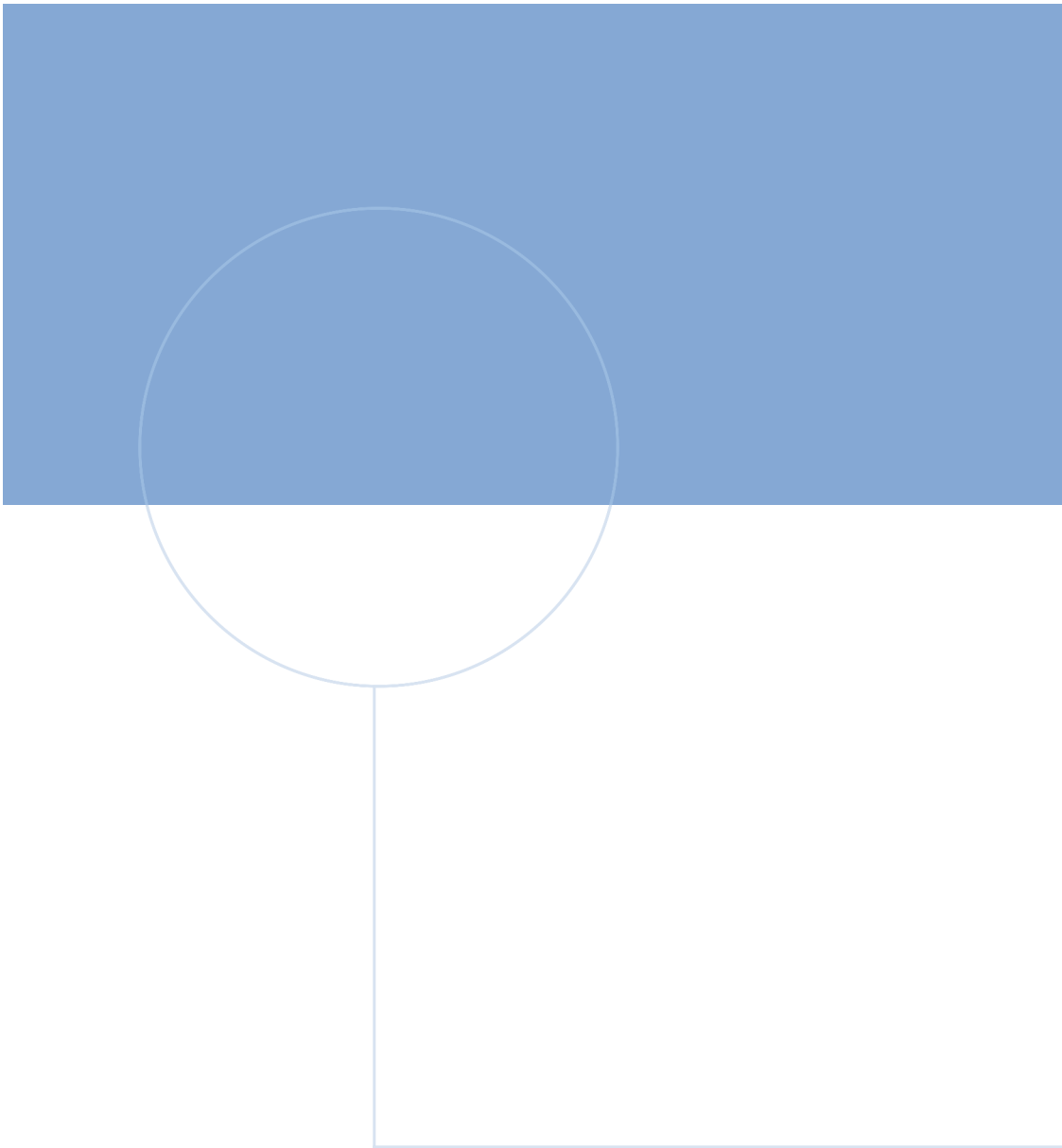
Interview guide (group business)

a. Where do you work? General about work position.
b. How or in what way do you cooperate with [*the university*]
c. What kind of projects in cooperation with [*the university*] are you involved in?
d. Do you cooperate with other institutes? Universities or University colleges?
e. How do you decide for what projects you will be involved in? and what you will not be involve in? What are your criteria`s for deciding what projects you will be involved in?
f. What are important criteria's for choosing partners in a project?

I. (Discuss projects from notes.)

a. Why did you decide to be involved in this project?
b. What are important aspects in the process of co-operation with others?
c. When taking decisions. – what are important factors for making the "right decision"? (eg. Information, regulations, group cooperation, experience)
d. How do you typically define failure and success for a project? Criteria`s?
e. How do you communicate the project result internally in your company? Externally? How do you communicate and share information under the process when relevant? What information had influence?
f. What information do you feel missing? – and why is this information important for you?
If [*the university*] should improve something in this matter. – what could that be?
g. Do you see any benefit of your cooperation with [*the university*] ?– example?
h. How could [*the university*] improve cooperation with you / your firm?

i. Part 2:
Did you ever participate in any seminar or conferences organized by [*the university*]? Why?
ii. Do you follow [*the university*] in any social channels? (like Facebook Instagram or other)
iii. If Yes, what information are you looking for? And what do you use the information for?
iv. Do you read any publications from [*the university*]?
v. Follow up questions from the ICD framework.



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