



Master thesis in accounting and auditing, 15 hp  
Spring 2017

## **Intellectual capital reporting**

An explorative and explanative study of how universities in Sweden report on IC information

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# Abstract

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**Title:** Intellectual capital reporting – An explorative and explanative study of how universities in Sweden report on IC information

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**Abstract:** In society, intellectual capital (IC) is considered to be necessary in order to create value in organizations. The interest has expanded from private to public organizations such as universities. However, there is still a relatively small amount of research about IC reporting in universities, despite the importance of IC in universities. Previous research does not either consider different university characteristics, something that can help in the development of a common framework for IC reporting. The purpose with this study is to explore and explain *how* different universities report on IC information in their annual reports in regard to the characteristics size, maturity, type of institution and governmental dependence. The purpose was reached through a multiple case study of eight Swedish universities and a content analysis. The theoretical model was developed through resource based view, knowledge based view, institutional diversity and signaling theory and suggest that internal and external pressures affects the usage of IC assets, strategies and intentions with IC reporting. The results show that all universities report on IC information, to different extent. Relational capital and human capital was the types of IC reported on the most which can be explained by its close connection to the individual, compared to structural capital. The results did not show differences in the IC reporting regarding the different characteristics. However, a contribution of the thesis was the results regarding the IC reporting being integrated in different sections of the annual report, as a part of both strategies and historical performance.

**Keywords:** Intellectual capital, IC reporting, public sector, universities, voluntary reporting, university characteristics

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## Foreword

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We are now finishing four years of studies at Högskolan i Kristianstad with this master thesis. During these years we have been facing both successes and setbacks, but above all they have been very instructive and developing.

We would like to thank our supervisor Giuseppe Grossi who has been very engaged in our master thesis. He has guided us through the whole work and given us wise advices. He has always motivated us when facing difficulties, which we have appreciated.

Kristianstad, June 2017

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# 1. Introduction

Society is moving towards an economy where knowledge and other intangible assets like relationships and structures are considered to be necessary in order to create value in organizations and contribute to economic prosperity (Sanches & Elena, 2006; Ousama, Fatima & Hafiz-Majdi, 2012). These type of assets can be described as an organizations intellectual capital (IC) (Ousama et al, 2012). Furthermore, in order to be successful, organizations should according to the resource based view (RVB) use their resources in the most efficient way to gain competitive advantages and stay innovative. In the perspective of RVB, IC is seen as a subset of resources under an organizations entire resource portfolio (Barney, Wright & Ketchen, 2001) and can also be seen as the most valuable resource because of its ability to not decrease in value compared to non-IC assets (Galabova & Ahonen, 2011). Moreover, it is suggested that between 50 to 90 percent of the value created in organizations is derived from its IC, rather from their production. As of today there is no common definition of IC, which can be explained by the fact that definitions vary in different industries and even between different divisions in the same organization (Low, Samkin & Li, 2015). Another explanation is that the concept of IC is relatively unknown because of the difficultness to measure it in a precise way (Manzari, Kazemi, Nazemi & Pooya, 2012). However, one example of an IC definition is the knowledge, experience and information that exist in an organization in order to create value. It can also be defined as the intangible assets and resources in an organization that can be transformed into new products, services and processes in order to create value. Consequently, IC can be seen as for example the knowledge and the experience of the employees, but also as resources imbedded in the culture, systems and processes in an organization (Ousama et al, 2012).

The development of IC research up till now has progressed in three stages (Secundo, Elena-Perez, Martinaitis & Leitner, 2015). The first stage took place in the 1990s and was focusing on the awareness and meaning of IC and the importance of reporting and measuring it. At this time, there was also some proposals of guidelines and standards for the management and measurement of IC assets (Sangiorgi & Sibioni, 2017) For example

in the early 1990s Karl-Eric Sveiby purposed a categorization for measurement called the "Intangible Asset Monitor" where the three IC components individual competence, internal structure and external structure were examined from the three perspectives of growth, renewal and stability which created a 3x3 matrix (Abhayawansa, 2013). The second stage took place in the 2000s where guidelines were refined, for example by the Observatory of European Universities (OEU) described further in the problematisation, and some IC classifications was formulated. The following third stage is presently ongoing and has focused on IC practices in organizations, but also in different networks, industries and even nations (Secundo et al, 2015; Sangiorgi & Siboni, 2017).

According to Ramírez, Manzaneque and Priego (2017) IC has become an important topic over the last years not only in the academia world, but also for investors, regulators and other stakeholders. The growing interest has expanded from private to public organizations (Ramirez et al, 2017). A common critique against the public sector regarding accounting and accountability systems is that it should be more businesslike as the private sector which often is seen as the more superior sector. However, differences between the public and the private sector are influencing the management of human resources and administrative processes which complicates the adoption of private sector accounting systems in the public sector (Grossi & Steccolini, 2015). The public sector differs from the private sector because their main goal is not the creation of shareholder value, instead it is a range of different values from different stakeholders to whom the public sector must be transparent and accountable for (Schneider & Samkin, 2008; Grossi & Steccolini, 2015). The decision making process and the strategies in the public sector are also more constrained because they are set by political orientations and incentives, which in turn influences accounting practices (Grossi & Steccolini, 2015). Compared to private organizations, public organizations also face higher pressure from society because of their access to public funds (Sanchez & Elena, 2006). This result in a higher degree of complexity in the public sector compared to the private sector (Grossi & Steccolini, 2015). According to Schneider and Samkin (2008) IC represents a significant part of the value in public organizations, such as competencies that create public welfare. This is according to Grossi and Steccolini (2015) because of the wide range of different needs

among stakeholders in public organizations, which require them to focus on both financial and non-financial values such as education for example.

Despite the interest in developing IC assets in the public sector, the reporting of IC in the public sector is relatively limited and the focus has been on management issues rather than the reporting (Guthrie & Dumay, 2015). Furthermore, previous studies on IC in the public sector have focused on the advantages of IC rather than IC reporting (Bezhani, 2010). In a study by Wall (2005) who investigated the IC reporting in the public sector in Northern Ireland it was found that these organizations only focus on one part of the IC concept, namely human capital, and the framework they used in order to manage their IC assets was not an extensive framework (Wall, 2005). Moreover, in a review by Cuzzo, Dumay, Palmaccio, Matteo, Lombardi and Rosa (2017) it was shown that only a few articles investigate the reporting of IC in the public sector. However, research about IC reporting in public sector can be considered interesting because of the changes in their services due to economic and political factors (Guthrie & Dumay, 2015).

The growing interest on the issue of IC in universities can be explained by the fact that their aim and purpose is the production and the spreading of knowledge. Also, the most important investments in universities are connected to human resources (Ramírez et al, 2017). Furthermore, universities produce IC assets mainly through research and teaching, and their most valuable resources are teachers, students, researchers and the administration (Ramírez, Tejada & Manzanwque, 2016). Therefore, IC can be considered as both the input and the output in universities (Ramírez et al, 2017; Ramírez et al, 2016; Córcoles, 2013).

According to Corcoles, Peñalver and Ponce (2011) and Manzari et al. (2012) the most dominant categorization of IC assets in universities is by using the three elements: human capital, structural capital and relational capital. *Human capital* refers to the knowledge of the employees in the universities, acquired from both formal and informal education and educational processes embedded in different activities (Ramírez et al, 2017). It is connected to the individual competence, expertise and experience of students, professors and other staff members (Secundo et al, 2015). *Structural capital* refers to the

communication, management and dissemination of the technical and scientific knowledge in universities. It can be divided into organizational capital which includes for example culture, values, routines and the interaction between research and other organizational processes. Or technological capital which refers to available technological resources for example patents, databases, software and documentary resources (Corcoles et al, 2011). Structural capital can be further explained as the resources that would be found in the university itself if employees and students left the university (Secundo et al, 2015). *Relational capital* refers to the relationships between the university and its political, economical and institutional partners outside the university, for example private organizations, the government and society in general (Ramírez et al, 2017). It is also connected to the perception outsiders have of the university which includes image, prestige and the attractiveness as a place to work and study (Ramírez et al, 2017). According to Secundo et al. (2015) it is also important to connect the three elements of IC capital together, which can be seen as a fourth element since IC assets especially in knowledge intensive organizations are highly related to each other (Secundo et al, 2015). This linkage between IC assets refer to the old school of IC research and was pushed forward by Mouritsen, Larsen and Bukh (2001) who writes about the importance for organizations to tell a story and create a visualization about IC assets rather than only report on specific IC items in their IC reporting.

Low et al. (2015) writes that universities in Europe have been facing several changes in recent years in the way they are managed. Before, the main income for universities came from the government but these funds have been decreasing. Now, universities need to operate in order to get additional funds, for example through increasing their IC assets in order to generate income for their operations (Low et al, 2015). Decreasing funds from the government have also increased the competition among universities, which has resulted in higher pressure for universities to communicate information towards society (Ramirés et al, 2016). Today, universities also possesses greater autonomy concerning their organization, management and distribution of the budget, which has lead to an increased demand among citizens for transparency regarding the allocation of funds and economic outcomes as well as IC assets (Bezhani, 2010; Córcoles, 2013). In order to communicate with society and to be transparent universities use annual reports and a

significant part of the users of these annual reports are the university boards. University boards can be perceived as stewards for society as they are monitoring that universities act in line with their objectives, for example regarding performance and capabilities. Annual reports are also used by boards in their decision making and in order to hold others accountable (Dixon & Coy, 2007). To reach potential students however, the most effective strategy according to Wijaya and Krismiyati (2013) is through social media where universities are focusing on building their brand rather than staying accountable.

Traditionally, the accountability in universities and their reporting of information in annual reports have been concentrated on ensuring financial stability rather than on IC assets (Córcoles et al 2011). According to Guthrie and Dumay (2015) literature in the accounting field specially point out the importance of research on the measuring and reporting part on IC, in order to improve processes in both public and private organizations. Furthermore, Low et al. (2015) claim that the public sector is one of the least explored areas of IC and that universities have been overlooked in existing IC research. Leitner and Warden (2004) also point out a demand for both methodological and theoretical work in order to gain a better understanding about the value in these types of organizations. Since year 2007 Austria is the only country in Europe with an obligation towards universities to present a report containing information about IC, in rest of Europe it is voluntary (Córcoles et al, 2011). However, Sweden and Nordic countries in general are seen as precursors when voluntary reporting of intangible assets is concerned (Arvidsson, 2011). Among studies on IC in universities there is Bezhani (2010) who investigated IC reporting in universities in the UK and found that the voluntary IC reporting is low. On the contrary, Sangiorigi and Siboni (2017) who investigated IC reporting in Italian universities, found a significant amount of reported IC information. Moreover, in a review by Dumay, Guthrie and Puntillo (2015) it is seen that most of the studies on IC in universities are done in Italian and Spanish universities.

## **1.2. Problematisation**

Despite the importance of IC in universities and regardless of efforts around the world, there is still a limited amount of tools available and no common accepted framework in order for universities to identify and measure IC assets (Sanchez & Elena, 2006; Ramirez et al, 2017). One problematic aspect regarding a common framework is that compared to private organizations, universities have a higher variety of objectives when it comes to IC and until now only a few universities have been trying to manage and measure them (Bezhan, 2010; Córcoles, 2013). Universities are also in general complex and bureaucratic organizations that are dealing with complex tasks of professionalism and it is described difficult to implement new processes and tools because of the way they are governed (Secundo et al, 2015). However, the existing literature regarding IC in universities is primarily focused on developing frameworks regarding identification and measurement of IC (Hebersam, Piber & Skoog, 2013). The main initiative and one of the most relevant projects was taken by the OEU in 2006 (Secundo, Perez, Martinatis & Leitner, 2017) where a set of measurements was developed by fifteen universities in eight different countries in order to improve the quality in universities and develop a benchmarking framework regarding IC reporting (Hebersam et al, 2013). By an interactive process between the OEU and university representatives a complex and analytic framework was developed in order to help universities in the assessment of IC assets (Sanchez & Elena, 2006). More recent but less comprehensive studies have based its frameworks on the work of the OEU and developed it further, for example (Ramirez & Gordillo, 2014) and (Ramirez et al, 2017). Other initiatives have also been taken by for example Schneider and Samkin (2008) who together with the local authorities developed a framework consisting of 26 IC related items in order to assess the extent and quality in IC reporting in local governments. Later on, Low et al. (2015) have developed this framework further in order to better suit universities.

The problematisation of this thesis consists of two aspects. The first aspect is that the research on IC reporting in universities is still relatively small (Low et al, 2015) and the research that do exist primarily focus on the measurement and identification of IC assets (Hebersam et al, 2013). However, in the search for articles in HKRs database summon on

the topic IC and universities, no research was found about how universities with different characteristics report on IC information in their annual reports. Instead, articles emphasize on the importance of developing a common framework in order to help universities to identify and measure IC assets (Corcoles, 2013; Burgman & Roos, 2007; Ramirez et al, 2017). However, in order to develop such framework we suggest a need for a deeper understanding about how universities report IC information today and if there is a difference between universities with different characteristics. Therefore, the aim of this thesis is to explore and explain how universities in Sweden with different characteristics in terms of size, maturity, type of institution (university or university collage) and governmental dependence, report on IC information in their annual reports. One of the arguments for this purpose is that an examination about how different universities report on IC information could increase the IC knowledge in universities and be helpful in the framework development for assessing IC assets. The purpose is also necessary according to Córcoles et al. (2011) statement that universities have been overlooked in existing IC research. As well as Letiner and Wardens (2004) remark that there is a demand for both methodological and theoretical work about IC reporting in public organizations. Furthermore, Sangiorgi and Sibioni (2017) writes that in their opinion, frameworks for measuring and assessing IC information in universities should be developed in a way that distinguishes different characteristics in order for the frameworks to be more customized. Therefore they suggest future research about how universities with different characteristics report on IC information (Sangiorgi & Sibioni, 2017). Secundo et al. (2015) also suggest that a specific model for measurement and assessment of IC should be developed for each university with consideration to for example different levels of maturity.

Signaling theory can be helpful in the explanation of why organizations take on the voluntary task of disclosing IC information, which is because it reduces the information asymmetry in organizations. By disclosing IC assets, the party with more information sends signals to other interested parties and creates credibility among stakeholders which in turn increases reputation and image (Brüggen, Vergauwen & Dao, 2009). The increasing globalization and competitive environment among universities also puts more pressure on them to maintain their image and credibility in order to remain competitive

(Gallego-Àlvarez, Rodríguez-Dominguez & García-Sánchez, 2011). This thesis will focus on exploring and explaining the concepts of university characteristics and how they report on IC information. One research endeavor that can be seen a driver for anticipating interesting results between the concepts of this thesis is Gallego-Àlvarez et al. (2011) quantitative research about university characteristics and their transparency in general. They found a positive and significant correlation between the transparency in universities and the two variables size and degree of internationality (Gallego-Àlvarez et al, 2011), which partly can be explained by signaling theory, because larger organizations experience more pressure from the external environment and are therefore trying to send more signals by disclosing information and become more transparent (Scaltrito, 2016). Another theoretical aspect that motivates further research between the concepts of university characteristics and their IC reporting is the perspective of institutional diversity. According to Morphey (2009) diversity among universities is preferred by the government because then students have more educational programs to choose from. The increased competitive environment among universities in Europe has also resulted in the need for universities to specialize themselves in order to survive, which has influenced their strategically behavior in regard the management of resources including IC resources (Salini & Turri, 2016).

Furthermore, according to Vergauwen, Bollen and Oirbans (2007) who investigates IC reporting in private organizations, it has been shown that a high level of IC within the organization results in a high level of IC reporting. However, there are substantial differences in the level of IC reporting in regard to specific IC assets. One explanation to these differences could be that organizations report more information on those IC assets that are most important in the value creation or because collecting the information costs less money for some IC assets than others (Vergauwen et al, 2007). Considering the high level of IC in universities we suggest that like private organizations, there could be differences in how universities are reporting their IC information as well. Differences in reported information in general can according to An, Davey and Eggleton (2011) be explained by signaling theory in the sense that organizations of high quality disclose IC information to a greater extent than organizations of lower quality. Since IC reporting is a way for organizations to signal to society about their quality in order to differentiate

themselves from lower quality organizations (An et al, 2011). Therefore, it could be suggested that universities focus their IC reporting on those assets they are successful in and want to send signals about to society in order to differentiate themselves.

The second aspect of the problematisation in this thesis is that despite of the fact that Sweden and other Nordic countries possess a high level of IC (Lin & Edvinsson, 2008) and that these countries are on the leading edge regarding voluntary disclosures in general (Arvidsson, 2011) the previous research on IC in Sweden focuses mainly on private organizations and not on universities. Unlike research about IC and universities in Spain (Corcoles et al, 2011; Sanchez & Elena, 2006; Ramirez et al, 2016), Romania (Elena-Perez, Saritas, Pook & Warden, 2011), Austria (Hebersam et al, 2012) and on an European level (Secundo, 2015). As stated before, the purpose of this thesis is to explore and explain how universities with the different characteristics size, maturity, type of institution and governmental dependency report IC information in their annual reports. The purpose extracts from the need for a deeper understanding about IC in universities expressed by Low et al. (2015), and the two aspects of the problematisation in this thesis which are: (1) the need for a common framework in order for universities to identify and measure IC assets as well as the need for the framework to be developed in regard to different characteristics in order to suit all universities. And (2) the lack of research about IC in Swedish universities compared to other EU countries. This thesis aims to contribute to the knowledge about how universities are reporting on IC in their annual reports which could indicate different conditions that exist among universities with different characteristics. This knowledge can in turn be helpful in the development of a common framework in order for universities to measure and identify IC assets more effectively and according to their specific conditions.

### **1.3. Purpose**

The purpose of this study is to explore and explain *how* different universities are reporting on IC information in their annual reports in regard to the characteristics size, maturity, type of institution and governmental dependence.

The purpose will be reached through multiple case study of eight Swedish universities where a content analysis will be applied in order to examine the type of IC information reported, its quality and its location in the annual reports.

## **2. Theoretical framework**

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*In this chapter the theoretical framework is presented which aims to capture theoretical aspects regarding IC reporting and university characteristics in order to achieve the purpose of this thesis. The chapter will be concluded in a theoretical model development together with expected results.*

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The theoretical framework chapter is divided in three parts where the first part handles IC reporting and presents a theoretical consideration of the usage and importance of IC reporting in universities and in organizations in general with the help of sociological and accounting theories. The second part is about universities and draws upon the theory of institutional diversity in order to explore how different characteristics can influence their IC reporting. The second part also contains theoretical assumptions and previous research about the university characteristics size, maturity, type of institution and governmental dependence. At last, the chapter is concluded in part three where the theoretical model is developed together with a presentation of expected results.

### **2.1. IC reporting**

According to Schaper (2016) accounting research is in general based on a range of different sociological theories, however signaling theory and the resource based view followed by the knowledge based view, is described as two of the most common theories explaining the importance and usage of IC in organizations (Schaper, 2016). The resource based view (RVB) explains how organizations uses resources in order to stay competitive (Kristandl, 2007) and the knowledge based view (KVB) puts special emphasis on the importance of IC resources (Galabova & Ahonen, 2011). At last, signaling theory explains why organizations take on the voluntary task of reporting IC information towards society.

### **2.1.1. Recourse based view**

According to Kristandl (2007) organizations can be looked at from two angles, namely the product side and the resource side. While the product side of an organization often is a subject for economic theories, the resource side has more strategic aspects in terms of internally using resources in order to stay competitive (Kristandl, 2007). The RVB has this internal focus and addresses aspects related to an organizations capabilities to benefit from its resources in the most efficient way, which is described as necessary for a sustainable competitive advantage. RBV also states that because outputs in organizations are derived from its resources, organizations should position themselves in regard to their resources instead of their products and services (Galabova & Ahonen, 2011). Moreover, although RBV was developed from research on the private, its application on higher education is useful for understanding the knowledge transfer that occurs in universities (Powers & McDougall, 2005). Even though RBV does not divide resources in tangibles or intangibles, it is still used in research in attempts to develop IC definitions, as IC assets are seen as a subset of resources under RBV (Barney et al, 2001). Furthermore, according to Galabova and Ahonen (2011) there is an agreement amongst most of the IC scholars that not all resources in an organization possesses the same value and that IC is more valuable than non-IC assets. This is because of ICs ability to increase value of an organization without decreasing its own value (Galabova & Ahonen, 2011).

According to Bontis, Janosevic and Dzenopoljac (2015) organizations are seen as heterogeneous and can be characterized in regard to their unique resource portfolio. This portfolio can be seen as different packages of resources which enable organizations to implement activities with different outcomes. Therefore, it is important for organizations to obtain detailed analyses of their resources in order to gain a better understanding of their competitive advantages (Bontis et al, 2015). However, in order for resources to contribute to an organizations competitive advantage they need to be valuable, rare in the sense that they cannot be easily accessible to competitors, inimitable in order to protect them from being imitated by competitors and non-substitutable in the sense that competitors cannot easily substitute a resource (Kristandl, 2007).

RBV can according to Powers and McDougall (2005) be applied in the context of universities because of the competitive environment where universities need to compete for funds and top-quality staff as well as relying on their merit to attract the brightest students. Their research focuses on entrepreneurial activities in universities which have emerged as a response to the increasing significance of knowledge in national innovation systems of economic development. Resources identified as important for entrepreneurial activities in universities are expert knowledge, scientific capabilities and access to information and personnel (Powers and McDougall, 2005). Rijnsoever, Hessels and Vandeberg (2008) also stress an application of RBV at an individual level as well as an organizational level because universities are professional organizations where success is considered to be dependent on individual research endeavors. Rijnsoever et al. (2008) uses the RBV perspective to explain why universities engage in networking activities in order to gain knowledge and stay competitive. By networking with other professionals and engaging in society researchers are investing in some kind of symbolic capital, which can lead to recognition in terms of prizes and funding. This type of successful cooperation can work as a competitive advantage and in turn lead to a higher academic ranking, an advantage in the competition for research grants and a larger number of publications (Rijnsoever et al, 2008).

In the lens of RBV, competence is seen as a valuable resource and according to Galabova and Ahonen (2011) it should be seen in the context of individuals as a synonym for knowledge, rather than an entire organization. Therefore, another theory called the knowledge based view (KBV) has been developed within the IC scholar and is even more IC relevant (Galabova & Ahonen, 2011).

### **2.1.2. Knowledge based view**

KBV can according to Curado, Henriques and Bontis (2011) be seen as an extension of RBV because it builds upon the main assumptions within RBV, however according to KBV knowledge is considered to be the most important strategic resource. The KBV framework was developed in regard to the accelerated level of technological

development, the increased globalization and the growing importance of knowledge intensive organizations. By Bontis et al. (2015) knowledge is described as a powerful resource in the present information era, where success has begun to depend more on intangible resources and less on tangible resources. Just as RBV but with more concentration on knowledge, KVB focuses on organizations resources and their capabilities to benefit from them in order to gain competitive advantage (Marr, 2004). According to KVB it is mainly by generating knowledge that organizations have the ability to be successful (Galabova & Ahonen, 2011). Furthermore, Sveiby (2001) argues that the knowledge of employees should be the core in an organizations strategy formulation and employees should be seen as the most important agents in business because all of the resources in an organization are in the end results of human actions (Sveiby, 2001). KVB also present a perspective of organizations as an evolving and dynamic system of knowledge application and production (Glauber, Wollersheim, Sandner & Welppe, 2015).

In general, KVB distinguish between two types of knowledge, namely tacit and explicit which in turn can be transferred to implicit knowledge. These two types of knowledge and the transformation between them are highly relevant when explaining different types of IC assets (Harris, 2000). Explicit knowledge is knowledge connected to theories and facts which easily can be codified and transferred to implicit knowledge such as scientific articles for example. Tacit knowledge however, refers to knowledge that is personal, difficult to formalize and therefore difficult to transfer to others. Tacit knowledge is also often closely connected to an individual's commitment to a specific action and because of the transfer difficultness it could be seen as the most valuable type of knowledge. Both explicit and tacit knowledge can exist on an individual level as well as in a group of individuals and organizational level (Kong, 2008). Furthermore, Kong (2008) implies a limitation in KVB because it assumes both explicit and tacit knowledge as a static and internal resource, which just like physical resources can be traded, controlled and exploited in organizations. However, knowledge should not be seen as a static resource because even though it can be collected and stored it does not create value in organizations unless it is transformed into for example a process, strategy or reputation. Instead, knowledge should be seen as flow within organizations (Kong, 2008).

Glauber et al. (2015) argues that the assumptions of KVB can be applied in universities for two of reasons. First, research and education is highly dependent on the knowledge base of universities and as expert organizations universities specifically rely on tacit knowledge connected to individuals. However, implicit knowledge in terms of written articles is also important because of the need to represent knowledge in a formal and declarative form. Second, although all knowledge intensive organizations depend on the knowledge of their qualified personnel, there are organizations that are less knowledge intensive than universities. Therefore, one can according to Glauber et al. (2015) argue that the dependency on individuals and their knowledge is higher in universities than in other less knowledge intensive organizations, considering also that universities faces more pressure because they are public organizations. Additionally, the fundamental assumption of KVB in the context of universities is their individual search for knowledge by professors, their ability to provide education and research results that might strengthen academic science and in turn enhance knowledge within society (Glauber et al, 2015).

### **2.1.3. Signaling theory**

Signaling theory can be used in order to explain why organizations voluntary report information towards society (Watson, Shrives & Marston, 2002) including the reporting of IC information (Dumay & Cai, 2015). According to signaling theory organizations take on voluntary reporting of information towards stakeholders in order to communicate resource quality and to decrease information asymmetry between the organization and its stakeholder with less information (Dumay & Cai, 2015). Through reported information, organizations can attempt to indicate that they are performing better than competitors by sending signals about their performance and differentiate themselves from organizations with lower quality (Maingot & Zeghal, 2008). According to Uyar and Kilic (2012) extensive reporting sends a positive signal about an organizations management and resources. Furthermore, organizations have the opportunity to choose communication channels to report from depending on the type of information and the type of audience targeted (Uyar & Kilic, 2012). In organizations that offer services, consumers often have

less information about the quality of these services than the organization itself. Therefore, the consumers have to make own conclusions about the quality of the service based on the available information. Signaling theory states how different evaluations are made about the quality of the service, without it being observable for the consumer as a result of information asymmetry (Kalafatis, Ledden, Riley & Singh, 2016). Through reported information the management of an organization can also signal that they are behaving according to the interest of the owners (Broberg, Tagesson & Collin, 2010). Another reason for organizations to take on voluntary reporting is to show positive results and behavior in order to raise more funds (Scaltrito, 2016).

Voluntary reporting has according to signaling theory other benefits besides decreasing costs resulted from information asymmetry. Larger organizations are for example more exposed to pressure from society and interference from the government and are therefore trying to be as transparent as possible (Scaltrito, 2016). By reporting voluntary information organizations can handle these pressures and gain financial benefits and therefore, organizations with high levels of IC are motivated to signal information about their IC to society (Whiting & Miller, 2008). Examples of benefits from signaling about IC in annual reports are an improvement of the image and reputation of the organization, an attraction of investors or funds and an improvement of the relationships with stakeholders. By reporting information about IC, organizations also send signals about their ability to create value in the future. However, due to organizational differences there are several different methods and focuses regarding the management and the reporting of IC assets (An et al, 2011).

Two factors that can explain differences between organizations in the behavior of voluntary reporting are size and the how much of importance IC has in the organization (Bozzolan, Favatto & Ricceri, 2003). Larger organizations and IC intense organizations are more prone to report IC information as a strategy to signal to their stakeholders about positive performance and behavior. In organizations where IC works a driver for future value the reporting of IC information is especially important for both attracting funds and other stakeholders (Brüggen et al, 2009). Furthermore, according to signaling theory larger organizations report more IC information as a result for being more exposed to

external pressure and public investigations. By being more transparent and report IC information on a voluntary basis these organizations could avoid legal and social consequences connected to a public investigation (Broberg et al, 2010). Organizations in the public sector are often built upon IC assets like competencies and skills in order to generate public welfare (Schneider & Samkin, 2008) and according to (Uyar & Kilic, 2012) it is important for organizations in general to report information about assets of high value. Therefore, it is important for organizations in the public sector to identify and evaluate their IC assets in order to report information about them to society (Ramirez, 2010). Because universities are public, IC intense organizations with IC assets both as input as well as output and that they rely on IC assets for future value, universities have several motives to report IC information towards society (Ramirez et al, 2017). Because of the competitive environment among universities where they need to compete for funds from the government, it is important for them also to send signals through IC reporting to society in order to develop and maintain an image as well as be transparent (Gallego-Alvarez et al, 2011).

## **2.2. Universities**

This section contains part two of the theoretical framework which handles the part about universities and their different characteristics regarding size, maturity, type of institution and governmental dependence. First, the theory of institutional diversity is presented in order to discuss the origin and the presence of different universities in society. Furthermore, there is limited empirical evidence about different university characteristics and IC reporting (Low et al, 2015). But several studies investigate how characteristics among private organizations influence IC reporting (Alcaniz, Gomez-Bezares & Ugarte, 2015; Oliveira, Rodrigues & Craig, 2006; Whiting & Woodcock, 2011). Therefore, the theoretical assumptions about university characteristics in this thesis will be developed through presented theories and previous studies regarding IC in universities and private organizations as well as voluntary reporting in general.

### **2.2.1. Institutional diversity**

One of the most discussed topics in studies of higher education is institutional diversity (Salini & Turri, 2016). According to Huisman, Meek and Wood (2007) governments are trying to maintain and even increase the diversity among universities primarily because it can be seen as an intrinsic good. A certain level of diversity is seen as healthy in the higher education system, since it contributes to an increased level of participation and an increased range of different options towards students (Huisman et al, 2007). Furthermore, institutional diversity among universities gives the universities the possibility to adapt certain strengths in order to respond to the needs of certain students. Another explanation to diverse universities is the fact that society is diverse and diversity among universities makes it easier to handle shifting needs among students. Diverse institutions can also be seen as more cost effective in comparison to having homogenous institutions that produces all types of outcomes to society (Morphey, 2009). Despite the fact that universities are diverse because of an intrinsic good, few studies within higher education are focusing on the conceptualization and measurement of diversity (Huisman, Lepori, Seeber, Frölich & Scordato, 2015). To focus research on diversity in universities can be seen as important for example in order to understand how diversity develops over time which can help in the development of higher education structures in the future (Huisman et al, 2007).

Although institutional diversity exists among universities, there are also forces that are making universities become more similar to each other. Dimaggio and Powell (1983) are for example arguing that as organizations within a certain field become more established they are also becoming more similar in regard to structures and outputs. This concept is called isomorphism and can be described as a force that makes organizations become more similar if they are facing the same conditions (Dimaggio & Powell, 1983). Furthermore, newer organizations like for example younger universities tend to adapt existing forms and structures of older originations in the same field, in order to establish legitimacy. This applies for older universities as well as they tend to imitate policies in higher education systems on a more globally level (Hallonsten & Hugander, 2014).

Aside from isomorphism forces making universities similar, conditions that can be seen as drivers for diversity are for example specialization and competition (Hallonsten & Hugander, 2014). Specialization and competition among universities are in turn resulting in different objectives and different services that are being offered in universities, which also affect their behavior in the search for recourses (Brennan & Osborne, 2008). Universities can also be seen as unique because of the different individuals among students and staff members (Huisman et al, 2007). Diversity among universities can also be seen from the two perspectives of horizontal and vertical, where the horizontal aspect is connected to for the internal environment as for example size and the vertical perspective to differences in the external environment as for example reputation and prestige. There can also be differences in the quality of research and teaching as well as governmental grants and student satisfaction. These differences in universities are in turn affecting the management of resources, the quality assurance and the balance between teaching and research. It can also affect the incentives of both administrative and academic staff which influences the quality of student learning and experience (Brennan & Osborne, 2008).

Universities can also be seen as hybrid organizations with elements from both the public and the private sector where collaborations are taking place between universities and the business sector. The aspects of hybrid organizations in universities also comes forward in the fact that universities now are dealing with lower governmental funds than before, which means that a larger part of their revenues comes from the market where they meet other additional stakeholders that are non-governmental. Therefore, universities also experience a large variation in expectations and are both affected by regulation by the government and other forces on the market (Jongloed, 2015). Another driver for diversity is the availability and competition of economic resources since the public funding is limited. This means that universities also are influenced by other universities that are competing for public funding as well. However, among universities there are different levels of financial governmental dependence since some universities obtain high levels of revenues from the market instead. This means that the behavior of universities regarding the search for recourses looks different depending on the level of governmental dependence (Salini & Turri, 2016). The choices and the behavior of universities are

therefore affected by pressure from different actors on the external environment. The competition of resources can also take form of both tangible referring to financial funding, and intangible referring to status and reputation. Because of the different pressures from different external forces, strategies within universities are different (Horta, Husiman & Heitor, 2008). In Huisman et al. (2007) study, who investigates the diversity within higher education between ten OECD countries including Sweden, shows that the higher education systems are highly diverse. It appears that size and governmental dependence are two of the characteristics that vary among these countries (Huisman et al, 2015) which are also common used in organizational theories in order to explain the presence of internal functions in organizations (Salini & Turri, 2016).

### **2.2.2. Size**

Size is according to Whiting and Woodcock (2011) one of the main explanatory factors to differences in IC reporting among organizations, which several studies states as a determinate of a high level of the content of IC reporting (Brüggen et al, 2009; Eddine, Abdullah, Hamid & Hossain, 2015). Several studies also found a positive relation between size and IC reporting in the private sector (Garcia-Meca, Parra, Larran & Martinez, 2005; Jindal & Kumar, 2012; Nandi & Ghosh, 2012; Branco, Delgado, Sá & Sousa, 2010). Regarding universities, Squicciarini, Millot & Dernis (2012) investigated the determinants of universities trademark patterns in US, which is connected to the research and development aspect of a university and is thereby included in the category of structural capital within the IC concept. According to Squicciarini et al. (2012) registration of different trademarks is a way for universities to signal about their IC assets, to protect their reputation and show their activities. They found a positive relationship between these registrations and university size as number of students registered.

One explanation for a higher content level of IC reporting in larger organizations could be that they are more professionalized and better structured due to more available resources (Delfmann & Koster, 2012). Another explanation could be that larger organizations are

more exposed for scrutiny and external pressures and therefore tend to report more information in general in annual reports in order to increase legitimacy (Jindal & Kumar, 2012). As organizations become larger their visibility also increases and they become more vulnerable to stakeholders opinions. Larger organizations also tend to have large and more diverse markets, which imply a wider range of different stakeholder to consider, who are also expecting these organizations to report on IC information in order to maintain a good reputation (Branco et al, 2010). They also tend to have more resources and a better information system due to different activities and are therefore more able to report more IC information. (Ousama et al, 2012). Larger organizations are also more likely to have a higher level of IC assets to report on as they often have more individuals working within the organization (Branco et al, 2010) which in the case of universities are students and staff.

However , there are some studies that did not find any relationship between size and IC reporting in organizations. For example, Bozzolan et al. (2013) who investigated private organizations in Italy found size not to be an explanatory factor of the content of IC reporting.

### **2.2.3. Maturity**

According to Delfman and Koster (2012) organizations develop more and different skills, recourses and capabilities as they become older and the IC reporting in annual reports is suggested to be related to the time that the organization have been active as they also are imitating other organizations (Eddine et al, 2015). Older organizations are also often more developed and because of longer experience the costs of gathering and communicating IC information are suggested to become lower as the organizations grows old (Jindal & Kumar, 2012; Nandi & Ghosh, 2012). In the case of universities, older ones tend to report on information of better quality because of their long developed establishment (Gallego-Alvarez et al, 2011). It is also likely that universities in the same maturity level report on IC information the same way as they are imitating each other according to isomorphism forces (Branco et al, 2010).

However, there are mixed results regarding maturity as a determinant for IC reporting in organizations. While some studies suggest that older organizations does report more IC information (e.g. White, Lee & Tower, 2007) others do not (e.g. Eddine et al, 2015; Whiting & Woodcock 2011; Nandi & Ghosh, 2012). There are also suggestions that argues for the opposite, namely that younger organizations report more IC information because their establishment can be seen as more uncertain and are therefore more dependent on reporting on IC assets and other assets of non-financial character (White et al, 2007).

#### **2.2.4. Type of institution**

In Sweden, the difference between university and university collage is that universities do not need to apply to the government for permission to issue examination on doctoral level, in same extent as university collages (Universitetskanslersämbetet, 2017). Instead, universities have a general permission to issue doctoral level examinations while university collages need to gain permission from the Swedish National Agency for higher education (Högskoleverket) in order to do so. University collages can gain permission to issue examination on doctoral level in two research areas (Universitets och högskolerådet, 2017). A proposition accepted by the Swedish government (prop. 2008/09:134) states that besides granting university collages to issue doctoral level examinations, it is the Swedish National Agency for higher education responsibility to assure quality among the existing doctoral education programs. If these programs lack in quality the Swedish National Agency for higher education also have the right to withdraw the permission. About the quality of doctoral studies the proposition (prop. 2008/09:134) also states that in time of globalization, people's talent, engagement and knowledge is seen as the most important factor behind progress and growth in society. Furthermore, an important strategic aspect of growth and prosperity in society is the quality of doctoral education since access to highly educated workers enhances society and industries to develop and grow. According to proposition (prop. 2008/09:134) the foundation of university collages ability to get permission to issue examination on doctoral level and

the ongoing quality assurance among universities, is to have a diverse and dynamic national education system. It allows university collages to profile themselves towards specific research areas and prevent larger universities to refrain from strategic priorities because of their size and access to resources (prop.2008/09:134).

### **2.2.5. Governmental dependence**

The level of grants received by the government as percentage of total income can be seen as the level of governmental dependence of universities. Universities with a high level of received grants are more dependent on the government and therefore seen more as public organizations than universities with low governmental dependence. Furthermore, dependent universities are said to have stronger relationship with the government, because of their public aspects. Dependent universities are also facing a higher level of governmental monitoring and accountability regarding how the grants are being allocated which implies that dependent universities will report information in order to satisfy the government, while independent universities are more dependent on student fees and private donations (Gordon, Fischer, Malone & Tower, 2002). However, the fact that independent universities are more dependent on student fees and private donation means that they need to attract students and private donors with their uniqueness and their prestige. This means a need for independent universities to market themselves and show their excellence toward society to a larger extent than dependent universities. In order to attract private donors' independent universities also need to develop relationships within social networks as well as develop and maintain these relationships perhaps through reporting about successful achievements (Gordon et al, 2002). Jamali (2010) who investigates IC reporting in both dependent and independent universities in an Iran found out that independent universities report more information about structural capital while independent universities report more information about human and relational capital (Jamali, 2010).

## **2.3. Theoretical model development and expected results**

This section contains part three of the theoretical framework and presents the theoretical model development of this thesis together with some expected results. The section will end with an illustration of the theoretical model which will be applied later in the thesis in order to analyze the results of our empirical collection. Since universities and their characteristics according to Low et al. (2015) have been relatively overlooked in existing IC research, the theoretical framework regarding characteristics presents aspects about private organizations, public organizations as well as universities. Therefore, the theoretical model in this section aims to gather these aspects and discuss them more on the basis of universities.

### **2.3.1. Universities and IC reporting**

The first theory presented in this thesis was the *recourse based view* (RBV) which is used to discuss the internal importance and usage of IC assets in universities. According to RBV, universities gain competitive advantages by using its resources in the most efficient way because of the fact that outputs and performance are derived from resources (Ahonen & Galabova, 2011). In the perspective of RBV IC assets are seen as a subset of total assets (Barney et al, 2011) which in universities is considered to be the most important type of asset due their main goal of producing and spreading knowledge (Ramirez et al, 2017). RBV also suggests that universities can be characterized due to their customized recourse portfolio which enables them to differentiate themselves and attract certain types of students, staff and organizations to collaborate with (Bontis et al, 2015). An example of universities differentiating themselves in order to compete with other universities is universities that focus on entrepreneurial activities where IC resources such as innovation and network capabilities are significant (Powers & McDougall, 2005).

The second theory presented was the *knowledge based view* (KBV) which builds on the same logics as RBV but more focused on IC since it stresses the internal importance of knowledge connected to the individual and the university (Marr, 2004). KBV divides

knowledge in tacit, explicit and implicit where tacit knowledge is more connected to an individual's commitment and explicit knowledge can more easily be transferred to implicit knowledge within universities (Harris, 2000). Therefore, explicit knowledge can be seen as human capital which in turn can be transferred to implicit knowledge such as structural capital since human capital is according to Ramirez et al. (2017) and Corcoles et al. (2011) connected to knowledge of staff and students and structural capital to research and organizational processes. Furthermore, tacit knowledge can be seen as both human capital and relational capital since relational capital according to Ramirez et al. (2017) refers to relationships and can be seen as the result of individuals commitments. Essentially, KBV stresses the importance of human and relational IC assets in universities since it is highly dependent on the knowledge base of its students and staff, but also structural IC assets because of the importance to represent knowledge in a formal and structural form (Glauber et al, 2014)

The third theory presented was *signaling theory* which was used to explain why universities take on the voluntary task of reporting on IC information in their annual reports. According to signaling theory universities report on IC assets in order to communicate their quality to the external environment and also to decrease the information asymmetry due to stakeholders with less information (Dumay & Cai, 2015). Because of the high IC level in universities they are more prone to report IC information than other organizations since IC assets in universities also works as a driver for future value (Brüggen et al, 2009). Another reason is the possibility for universities to differentiate themselves from other universities with lower quality in order to compete for students and to send signals about productive behavior to the government in order to get governmental approval and funds (Maingot & Zeghal, 2008; Scaltrito, 2016).

### **2.3.2. University characteristics and IC reporting**

The fourth theory presented in this thesis was *institutional diversity* which was used to explain the origin and presence of different universities in society. According to Huisman et al. (2007) diversity among universities are seen as an intrinsic good desired by the

government because it contributes to student participation, it gives universities the possibility to focus on certain strengths in order to attract certain students and it facilitates the management of shifting needs among students. Besides from such external forces there are also internal forces enhancing the diversity such as competitive and specialization strategies that influences the management of and the search for IC resources within universities (Brennan & Osborne, 2008). However, there are also forces of isomorphism making universities that are facing the same conditions become more similar to each other (Dimaggio & Powell, 1983). For example, more recent established universities tend to adapt forms and structures from existing universities with the aim to do the right thing and to establish legitimacy (Hallonsten & Hugander, 2014). Diversity among universities also comes forward in the fact that universities have different levels of hybrid aspects since some universities obtain more private funding than others (Salini & Turri, 2016) which can be connected to the governmental dependency aspect of this thesis. The result of different universities facing pressure from different external actors is a difference in the behavior and the strategy making regarding IC assets in universities (Horta et al, 2008). Essentially institutional diversity tells us why there are different universities and that these could influence how universities choose to report on IC information.

Besides explaining why universities report on IC information, signaling theory is also used in this thesis to discuss the university characteristic *size*. According to signaling theory larger universities should report more IC information since they are exposed to more pressure from the government and are therefore trying to be more transparent in order to avoid legal and social consequences (Broberg et al, 2010). Since large organizations and organizations with high level of IC assets according to Whiting and Miller (2008) and Scaltrito (2016) are more prone to report on IC information it could seem logical to assume that it is also because of the high level of total recourses in general. For example, the level of IC should increase with the number of individuals within the university (Branco et al, 2010), specially in regard to human and relational capital since it is the IC type most connected to the individual. A line can also be drawn between large universities with a high level of total recourses and the quality of the education since performance according to RVB and Galabova and Ahonen (2011) is

derived from internal recourses within the university. An university with education and performance of high quality is according to signaling theory more motivated to report information (Maingot & Zeghal, 2008) and therefore this thesis suggest that larger universities report more IC information than smaller universities. Other motivations for the expected result regarding size are that larger universities tend to have a higher level of diverse students and collaborative organizations that are expecting these universities to report on IC and keep their reputation (Branco et al, 2010).

Regarding *maturity*, this thesis argues for both more and less extensive IC reporting as universities gets more established since there are theoretical assumptions and previous research that argues for both. The arguments for more extensive IC reporting as universities grow old are that older universities have had more time to build their portfolio of IC recourses and are therefore in this thesis suggested to have a higher level of IC assets, for example more established relationships with stakeholders. According to signaling theory and Whiting and Miller (2008) universities with high level of IC assets should also be more motivated to report IC information. Older universities are also suggested to have more developed and effective internal communications structures because of more experience, which in turn could result in lower costs of collecting and reporting on IC information (Jindal & Kumar, 2012). However, in this thesis this argument is suggested to work for younger universities to be reporting more IC information as well, because older universities could be seen as more complex and bureaucratic which would make communication systems less effective and the costs for gathering and reporting on IC information higher than in younger universities. Other arguments for a more extensive IC reporting in younger universities are that universities according to signaling theory and Gallego-Alvarez et al. (2010) report on IC information in order to compete with other universities and younger universities existence can according to White et al. (2007) be seen as more uncertain which could suggest a greater need for younger universities to compete. Essentially this thesis enhances arguments for both older and younger universities to report more IC information. Also that universities on the same maturity level due to forces of institutional diversity and isomorphism have the same level of IC reporting.

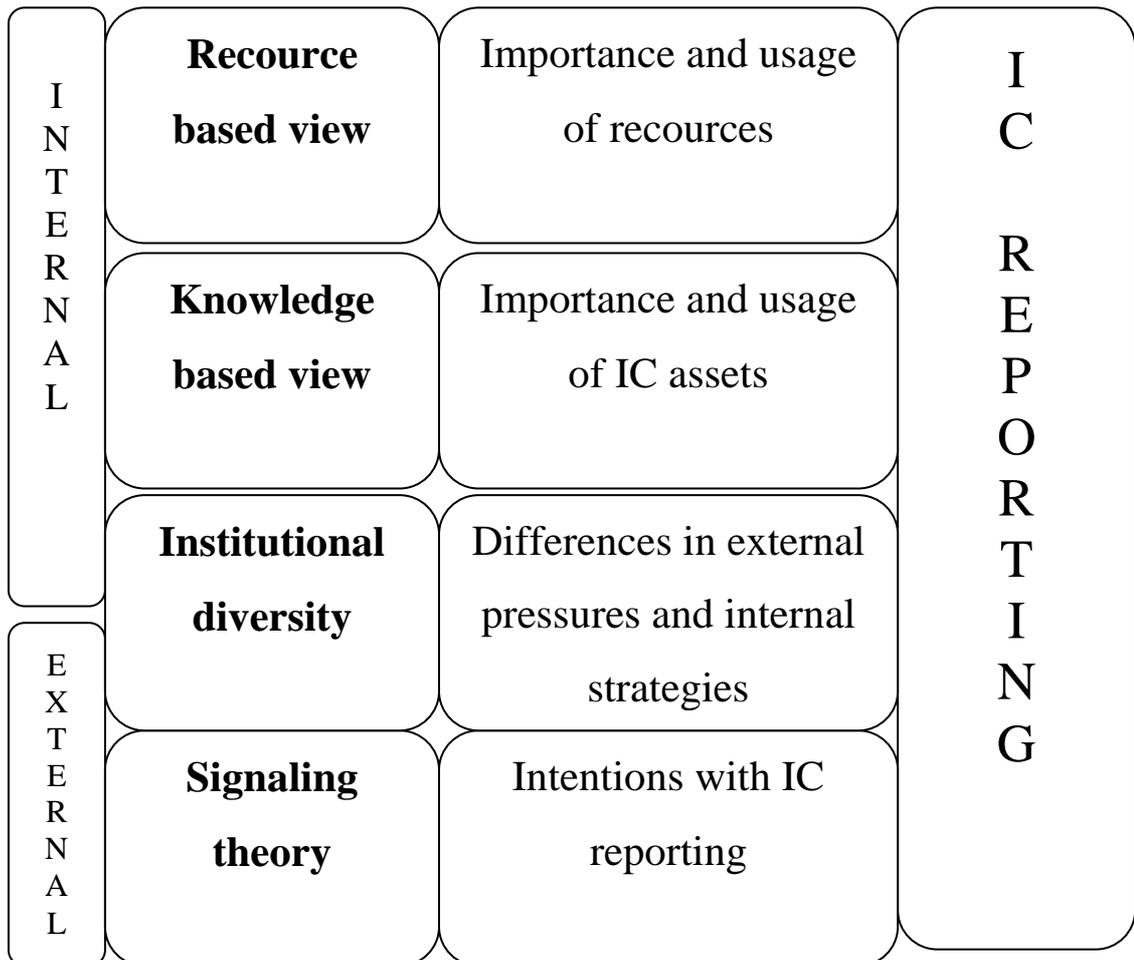
The expectation regarding the characteristic *type of institution* in this thesis is that universities with a general permission to issue doctoral examinations should have more of an extensive IC reporting than university collages since the Swedish National Agency for higher education have the responsibility to assure quality among doctoral programs (prop.2008/09:134). Quality is in turn by signaling theory connected to IC reporting since universities of higher quality are more motivated to differentiate themselves from lower quality universities (Dumay & Cai, 2015). However, also university collages have the opportunity to issue doctoral examinations but only in two research areas, and this thesis does not make a distinction among university collages with and without this permission. An alternative argument for the opposite of what is expected in this thesis is that universities perhaps faces the risk of relying too much of its reputation and chooses not to report on IC information for competitive reasons.

Regarding *governmental dependence* this thesis argues for more extensive IC reporting among universities with high governmental dependence, although there are some arguments for the opposite. According to institutional diversity, universities are being pressured by external funders (Jongloed, 2015) which are the government for universities with high governmental dependence and private funders for universities with low governmental dependence. The relationship between government and university is therefore stronger among universities with high governmental dependence which enhances the governmental monitoring regarding allocations of funds, which implies that dependent universities will be more transparent (Gordon et al, 2002) and report more IC information. However, this thesis also suggests that independent universities need to communicate successful achievements in order to develop relationships with private funders (Gordon et al, 2002). But since universities according to (Wijaya & Krismiyati, 2013) are using annual reports in order to stay accountable rather than building their brand, perhaps this is done in another setting for example through networking with private funders.

## 2.4. Theoretical model

The theoretical model is presented in figure 2.4 and will be applied in the remaining chapters of this thesis in order to analyze the data collected in regard to the four different characteristics examined. The theoretical model suggests that RVB and KVB have an internal perspective in this thesis as they explain the importance and usage IC within universities. Furthermore institutional diversity enhances both the internal and the external perspective since it explains the origin and the presence of diversity among universities as a result of both external pressures and internal strategies within universities. Finally, signaling theory is by the theoretical model suggested to have an external perspective as it explains the intention of universities IC reporting.

Figure 2. 1. Theoretical model



### **3. Method**

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*This chapter begins with a presentation of the theoretical method, which includes aspects of how the thesis was written and how the empirical data was collected on a more theoretical level. Followed by the empirical method which contains a presentation about how the data was collected in more detail.*

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#### **3.1. Theoretical method**

According to Bryman and Bell (2015) research is connected to a range of different choices regarding methodology in order to fulfill the research purpose in a reliable way. This chapter concludes a presentation of these choices regarding research philosophy, scientific approach, research method and choice of theories.

##### **3.1.1. Research philosophy and research method**

This thesis aims to explore and explain how different universities in Sweden in terms of size, maturity, type of institution and governmental dependence report on intellectual capital (IC) information in their annual reports. The purpose will be reached through a multiple case study of eight universities in Sweden with a qualitative content analysis as research method. The method used is qualitative since we are analyzing the meaning of texts, tables and pictures in annual reports. Qualitative research is also associated with small scale studies (Denscombe, 2016), and since we are examining eight Swedish universities it can be considered as small scale. The reason for a qualitative content analysis as research method instead of a quantitative is because there are only 35 universities in Sweden and according to Bryman and Bell (2015) the precision of a quantitative study decreases as the sample decreases. Instead, we decided to focus on a selection of eight universities in order to examine them in depth. The reason for the number eight is a combination between the level of complexity regarding the empirical

method and the time frame of this thesis, which will be explained further in the empirical method part.

According to Schreier (2012) qualitative content analysis is used when there is a need for interpretation because the meaning of the content examined is less obvious, which is the case in this thesis because as stated in the introduction there is no common definition of IC, no accounting regulation or common used framework. This results in difficulty and a need to interpret, when trying to capture IC information in the annual reports. Qualitative research is also suitable when exploring something and trying to answer the question *how*. However, it is possible to analyze qualitative data quantitatively (Scapens, 2004), as we are doing since we for are measuring the frequency of IC items in the annual reports. Pratt (2009) expresses a problem with quantifying qualitative data to much because it can induce a quantitative mindset. In order for this thesis to focus on a qualitative research method instead, the presentation of the results and the analysis in chapter five will consists of examples from the text with our interpretations, supplemented with quantitative information such as frequencies.

As stated above, there is a need for interpretation in this thesis which makes the research philosophy interpretive research with the purpose to generate knowledge and understanding, and is often related to qualitative research (Denscombe, 2016). In the case of a interpretive research philosophy it is appropriate to do an explanatory case study where theory is used in order to provide convincing explanations, rather than do generalizations. If existing theories is not enough, it could be necessary to extend them in order to use them later in other case studies (Scapens, 2004). The explanatory part of the case study is in this thesis is connected to the part of the purpose referring to an explanation of how universities are reporting IC information. However the purpose is also to explore how universities are reporting on IC information regarding size, maturity, type of institution and governmental dependence which refer to the explorative part of the case study. According to Scapens (2004) exploratory case studies refers to exploring possible reasons for accounting practices and not to generate generalizations. Essentially, this study can be considered as subjective as the interpretation of the annual reports is shaped

of our own experiences and thoughts (Scapens, 2004). The risk regarding subjectivity will further be discussed in section 3.2.8. validity, reliability and generalization.

### **3.1.2. Scientific approach**

In order to explain and explore how Swedish universities report on IC information, a combination of an inductive and deductive approach is used. According to Bryman and Bell (2015) deductive research starts with theory, develops hypotheses or expected results and then tests them in reality. In inductive research on the other hand, theory is seen as the outcome of the study, and observations in reality is the starting point (Bryman & Bell). Since it already exist theories about IC reporting and diversity among organizations in general this study has its starting point in theory, like deductive research. But as stated in the introduction, there is a lack of research concerning how different universities report on IC information and therefore this study also aims to explore possible reasons for reporting IC information which is knowledge that could be brought back to theory. Accordingly, there will be a framework development in this thesis that is applied in the analysis of the results as well as some theoretical contributions in the conclusion.

### **3.1.3. Choice of theories**

The theories that have been used in this study are resource based view (RBV), knowledge based view (KBV) and signaling theory, which are the most common theories when explaining IC in organizations (Shaper, 2016). RBV have been used because it states that organizations can benefit from its resources in order to stay competitive (Galabova & Ahonen, 2011). RBV can also help to explain why universities are engaging in some activities in order to stay competitive and gain knowledge. For example universities are to some extent engaged with the society to get funding (Rijnsoever, 2008). Also knowledge based view (KBV) has been used because universities are dependent of their knowledge base (Glauber et al, 2014). Signaling theory has been used in previous research in order to explain why organizations report on IC information on a voluntary basis (e.g. Scaltrito,

2015; An et al, 2011). In Europe is it only Austria that is obliged to disclose IC reports (Córcoles, 2013), and this means that the reporting of IC information is voluntary in Sweden. Therefore is signaling theory an appropriate theory to use in order to explain how and why Swedish universities are reporting IC information. At last, institutional diversity has been used to explain differences among universities both because of internal and external forces (Huisman, Meek & Wood, 2007; Salini & Turri, 2016).

## **3.2. Empirical method**

The following section presents the literature search and data sources, the multiple case study as the investigating method followed by a description of content analysis as the research method. It also presents how the coding checklist was developed, how the universities examined were selected and a discussion about the validity, reliability and generalization of this thesis.

### **3.2.1. Literature search and data sources**

In the selection of literature used, consideration was taken to its relevance in relation to the subject of the study. The used literature consists of scientific articles and text books in the field of IC, voluntary reporting and diversity among universities. The articles have been searched and downloaded from HKR's database Summon. Consideration has also been taken to the publication date, where we have aimed to include current articles and reviews in order to see what research within IC has focused on and what is left. The most used journal is the *Journal of Intellectual Capital*, which according to Harvey, Kelly, Morris & Rowlinson (2010) is a journal of acceptable standard. The journal of intellectual capital can also be seen as highly relevant since the subject in this thesis is IC. Other used journals are for example *Journal of Management* and *Strategic Management Journal*, which according to Harvey et al. (2010) is journals of high quality. Journals of lower quality according to Harvey et al. (2010) has also been used since focus have been drawn to content, relevance and contributed knowledge rather than evaluations, examples are

*Management Decision, Journal of Organizational Change Management and Higher Education Quarterly*. Keywords used in the search for articles are *intellectual capital, intangible assets, voluntary disclosure, university, public sector, intellectual capital disclosure, university characteristics and institutional diversity*.

The eight annual reports that have been used in order to explain and explore IC reporting among universities in Sweden are from year 2016 and have been downloaded from the universities websites. Information about university characteristics was taken from the annual reports and the websites of the universities as well as the annual report for all universities and university collages in Sweden issued by the Swedish chancellor's office (Universitetskansliersämbetet, 2017). More information about how the information regarding university characteristics is presented in section 4.2.6 selection of universities.

### **3.2.2. Multiple case study as investigation method**

The purpose of this thesis is to explore and explain *how* universities with different characteristics report IC information in their annual reports. The purpose will be reached through a multiple case study of eight Swedish universities with different characteristics in regard to size, maturity, type of institution and governmental dependence. According to Denscombe (2016) and Yin (2014) a case study is suitable for in-depth investigations with the aim to provide possible reasoning by examining the specifics and to answer the questions *how*. A case study is also suitable when the purpose is of explanatory character, where it brings rich descriptions and insightful explanations (Yin, 2012). By concentrating on one or a few cases the researcher have the opportunity to discover things that perhaps a more large-scale method would have missed (Denscombe, 2016). Alvehus (2013) also states that a multiple case study enhances the possibility to discuss different environments or conditions of the cases compared to a case study with one case. Another reason why a multiple case study has been chosen in this thesis is because of the purpose to examine universities with different characteristics. According to Alvehus (2013) a multiple case study makes it possible to examine the research object in different environments which increases the interpretation and comparability possibilities. However,

since a larger number of examined cases often results in a more superficial examination of the different cases due to limited time resources, the researcher has to find an argument for the balance of number of cases and its impact on the depth of the investigation (Alvehus, 2013). In our case, this balance refers to the number of universities examined and the complexity of the checklist used in the content analysis in order to analyze the annual reports.

According to Scapens (2004) case studies have become popular within accounting research in recent years and there is a variety of ways that can be used. This thesis uses an explanatory case study, which according to Scapens (2004) tries to explain the reasons for what is observed. The focus in an explanatory case is the specific case, where theory is used in order to explain and understand the specifics, rather than do generalizations. The usefulness in theories is to give convincing explanations of the observations, and if the theories can't provide explanations it is necessary to adjust them or develop new ones which can be used in new case studies. Scapens (2004) also states that sometimes there is no clear cut between the different types of case studies, which is the case in this thesis because the method used also includes aspects of exploratory case studies. Exploratory case studies aims to explore possible reasons for certain accounting practices, without the possibility to make generalizations due to small samples. Instead, exploratory case studies can be seen as preliminary research that generates possible reasons that later can be tested with quantitative research (Scapens, 2004). In this thesis the explanatory part of the case study is reflected in the providing of explanations in what type of IC information universities report on and how they do it in terms of location, quality measures and illustrations. The explorative part is reflected in the providing of possible reasons of how universities report on IC information regarding different characteristics.

The starting point of this thesis was to put together a checklist by taking inspiration from other studies, which will be described further in section 4.2.4, to a complexity level that according to us was suitable and manageable in regard to our time limit. As a second step, the checklist was tested on one of the universities annual reports and with consideration to our time resources, the number of universities examined fell naturally. How the

universities were chosen will be further described in section 4.2.6 selection of universities.

### **3.2.3. Content analysis as a research method**

The research object in this study is universities annual reports which have been analyzed through a content analysis. Content analysis is according to Denscombe (2016) a way to quantify qualitative data such as texts or images by counting the frequency of words, sentences, pictures or text pieces with a certain meaning. In this thesis content analysis is used in order to analyze the type of IC information as well as its frequency, its location in the annual reports, its quality and the frequency of illustrations connected to IC. Content analyzes as a method can be applied differently but the process in general follows the same logical structure of the following steps (Denscombe, 2016).

1. The choice of a text sample
2. Decomposition of the text into smaller units
3. Development of a checklist in order to analyze text
4. Coding of the text in regard to the checklist
5. Counting the frequency of items in regard to the checklist
6. Analyzing of the conducted frequencies in relation to each other and its context

The same steps have been followed in this study. The first step is to choose what text that is going to be analyzed which in this thesis is annual reports and was stated already in the purpose. Steps two and three, decomposition of text and development of a checklist, are in this thesis connected because the IC information in the universities annual reports are not compiled in a certain section but instead scattered all over the report both in text, tables and images. Therefore the decision was made to develop a checklist that is less specific, with items for example such as "information about collaborations with Swedish universities" in order to intercept IC information in different contexts and forms. This decision is connected to the fact that as stated before, there is no common definition or common used framework to capture IC information. Because of the items less specific

form and the fact that the IC information is scattered the decision was made to read every page of the annual reports and to count each occasion that information was presented about each item in our framework. An "occasion" could sometimes be one sentence and sometimes a couple of sentences depending on how much information about the occasion that was presented. An example of an occasion referring to the item "information about collaborations with Swedish universities" is that each collaboration is one occasion no matter how much or little information that was presented about a certain collaboration. Part three which is the development of the checklist is described in more detail in section 3.2.4.

Furthermore, content analysis suits the purpose of the thesis because it is described by Bryman and Bell (2015) as a technique that systematically analyzes the content of a communication tool, such as annual reports. Systematic is described as a strength because the collection of empirics is done in a consistent manner which should mean that any researcher could use the checklist and come up with the same results (Bryman & Bell, 2015). However, since the coding checklist in this thesis is developed on a less specific level, interpretations are required in order to decide whether the content is connected to IC and which items it is connected to. Part four of the content analysis consists of the usage of the coding checklist and will be described further in section 3.2.5. At last, part five and six consists of the analyze methods which will be further described in section 3.2.7.

#### **3.2.4. Development of coding checklist**

In the development of the coding checklist used in this thesis inspiration have been taken from two different checklists by Bezhani (2010) and Ramirez et al. (2017). The study by Bezhani (2010) investigates the relation between the performance of 30 universities in the UK and their content of IC reporting in annual reports. The checklist used by Bezhani (2010) consists of 39 indicators divided in three categories. These indicators of IC information are predefined by the Ministry for the mandatory reporting for universities in Austria (Bezhani, 2010). Unlike Benzhani (2010), Ramirez et al. (2017) developed their

own checklist consisting of 31 indicators divided between three categories. Their indicators were derived and confirmed by questionnaires and interviews with members of the Social Councils of Spanish public universities, which consist of different stakeholders of universities, for example students, business organizations, university staff and public administration. The respondents scored all indicators according to how important, in their opinion, they are for universities. All the 31 indicators that are proposed achieved a high value, which implies that they are essential in the measurement of IC information in universities (Ramirez et al, 2017).

By combining the two checklists of Benzhani (2010) and Ramirez et al. (2017) we developed a coding checklist for this study consisting of 37 indicators divided between the categories of human, structural and relational capital. The coding checklist used in this thesis is presented in Annex 1. The indicators were adapted to our study, since some of them were very specific and some of them very broad defined. For example one of the indicators from Ramirez et al. (2017) was adjusted from “percentage of classes with less than 50 students” to “information about lecture size” and another indicator from Benzhani (2010) was adjusted from "graduations" to "information about graduation rate". These adjustments were made in order for all the indicators in our checklist to have the same level of specificity. After the coding checklist was developed it was tested on one of the universities in order to see how it worked in reality. Some adjustments were done, where some indicators were reformulated and other combined because that they were too similar.

### **3.2.5. The process of coding**

According to Bryman and Bell (2015) the process of coding is a crucial stage during a content analysis because it involves the action of converting text into measurable information with the help of a coding checklist and a coding manual. Denscombe (2016) writes that codes can be seen as labels that are added to empirical data and can have the shape of both names and numbers. By an interpretation of data the researcher engage in analytical coding. The text that is going to be analyzed has to be divided into units

(Denscombe, 2016) which as mentioned before, in this study sometimes consists of one image, one sentence or a paragraph. In a content analysis, the coding process corresponds as part four and builds on the usage of the developed coding checklist. In order to apply the coding checklist to the universities annual reports we developed a coding manual that stated how the information should be coded. Since the purpose of this thesis is to explain and explore *how* Swedish universities disclose IC information in their annual reports, the coding manual consisted of the indicators from the developed coding framework and codes related to how these indicators were presented in the annual reports. The codes are presented in table 4.2.5 together with an example and consist of a couple of quality measures adapted from a study by Cinquini, Passetti, Tenucci & Frey (2012) who examined the quality of IC information in Italian companies sustainability reports. The codes referring to quality used in this study are whether the IC information is qualitative or quantitative, historical, non-time specific or forward-looking and non-financial or financial. Other quality codes used is whether the IC information was presented in a general or a specific term, similar to Husin, Hooper & Olesen (2012), and if the quantitative information was presented in a table. According to Cinquini et al. (2012) information can be analyzed in a more complete way by using quality indicators than if just counting the frequency of reported items. The IC indicators found in the universities annual reports were also coded after their location in the report with consideration to under what headline the information was found. Since the structure of the headlines in the annual report differ from each other and since the IC information is scattered, the code for location could not be defined in advanced. Instead the coding regarding location consisted of the name of the headline. The universities used similar headlines, which made it easy to compile the results of where the information was located.

Also images can be used in annual reports as an alternative for organizations to communicate on their IC. The reporting of images in the annual report is a way to present the different activities by the organization. Therefore, there are a growing number of studies that includes images in the analysis of IC information. The main difficulty in analyzing images is to identify the right IC category, and it is therefore crucial to include the surrounding text in the judgment (Husin et al, 2012). The images in the universities annual reports were coded with the help of the surrounding text. In those cases when there

were no connection between the surrounding text and the images, only the image was taken into consideration when analyzing if it could be related to IC. Those images that could not be connected with IC were not included in the analyzing, because the coding could be too farfetched. The images were interpreted on and coded in two steps, regarding if they were connected to IC, and if it was related to either human, structural or relational capital.

During the first time the coding checklist and coding manual was applied on an annual report some rules were formulated in order to stay consistent when examining the rest of the annual reports. The first rule was that when a paragraph or a sentence that consisted of one indicator but several quality measures the paragraph or the sentence was coded with the quality measure that stood for the majority of the piece. The second rule was that if one specific occasion, for example a specific project, is mentioned more than one time in the same context it is only coded once. If there were two different projects, these were coded separate. Regarding the quality measure of general or specific information, consideration was taken to both the indicator and the other quality measures. For example, if there was qualitative, non-financial and historical information about a project it was coded as specific if information was presented about what kind of project and how it was executed, and general information if the text only stated that there had been some kind of project during the year. The coding consisted of the 4 different quality codes and the location code and was compiled in an excel document according to the example in figure 4.2.5.

**Table 3. 1 Quality codes and examples of a coded item**

<b>Quality measure</b>	<b>Code</b>	
Quantitative	Qn	
Quantitative and in a table	Qn*	
Qualitative	Ql	
Financial	F	
Non-financial	NF	
Historical	H	
Non-time specific	Nt	
Forward looking	Fl	
Specific	S	
General	G	
<b>Example of an occasion</b>	<b>Code</b>	<b>Headline</b>
Information about graduation rate	Ql, Nf, H, S	"Undervisning på grundnivå och avancerad nivå"

Source: Party adapted by Chinquini et al. (2012) and Husin et al. (2012).

### **3.2.6. Selection of universities**

As stated before this study is based on a multiple case study in order to explore and explain how universities with different characteristics in terms of size, maturity, type of institution and governmental dependence report on IC information. This method makes it possible to examine universities IC information reported in annual reports in different environments which according to Alvehus (2013) increase interpretation and comparability possibilities. The sample of this study is explorative which according to Dencombe (2016) often is connected to small scale studies with the aim to examine

relatively unexplored research subject or object. The subject of reported IC information in universities has been touched by researchers regarding European universities. However, as stated in the introduction no research was found about Swedish universities. Hence, this concepts studied in this thesis can be seen as relatively unexplored.

Furthermore, since this thesis is based on a multiple case study a selection of all 35 universities in Sweden has to be decided on. According to Scapens (2004) the selection should be developed in order for the researcher to focus on the purpose, and together with the theoretical framework, the characteristics of the cases be defined. The researcher should therefore try to choose those cases that represent these characteristics. In a interpretive multiple case study there could according Scapens (2004) be interesting to select some extreme cases. In this thesis, the purpose clearly states that the selection universities should represent the different characteristics that are going to be examined. Moreover, a mixture of a random and non-random selection of universities has been used in order to make sure that all characteristics categories are represented. According to Dencombe (2016) the method used in this study can be described as a stratified selection. A stratified method is a random selection but gives the researcher the opportunity to divide the population into groups and to select the necessary number of cases in each group randomly (Denscombe, 2016). In this study these groups were developed within all four characteristic categories: size, maturity, type of institution and governmental dependence. A list was made for each characteristic where the universities were put in a particular order before the groups could be developed, the lists is presented in annex 2. The section below describes how the selection of universities was developed in regard to each characteristic category.

The category of the characteristic *size* is determined by the total number of registered students in the universities in year 2016 according to their annual reports. This way of determining university size is for example used by Huisman et al. (2007) who writes that the number of registered students usually is unique for a university which also indicates a diversification among universities. In the list regarding size the universities were put in order starting with the university with the lowest number of registered students and ending with the university with the highest number registered students. The list was then

divided in four groups with the same intervals regarding number of students in order to make each group have the same proportion. The list is presented in annex 2 where each group has the interval of 6914 students and is colored differently.

*Maturity* is determined by the difference between year 2016 and the year that the university was founded according to their websites. The reason why there are many universities that are 40 years old according to annex 2, is because there was a reform among higher education in Sweden in year 1977 that led to the establishment of several new university colleges (Statistiska Centralbyrån, 2007). Following the example of size, the universities on the list regarding maturity were put in order starting with the youngest university and ending with the oldest university. This list was also divided in four groups with proportional intervals containing 135 years as presented in annex 2, each group is colored differently. When looking at the list regarding maturity in annex 2 it is possible to see an uneven distribution as there are 25 universities in the youngest group and only one university in the oldest group, the university in Uppsala.

The category of the characteristic *type of institution* is determined whether or not the university has university status with a general permission to issue examinations on doctoral level. The universities that do are determined as universities and the universities that do not are determined as university colleges (University chancellor's office, 2017). The information about the university status was collected from the website of each university. Since the category regarding type of institution only consist of two types of universities the list was divided in two groups, one group for the universities and one group for the university colleges, the groups are presented in Annex 2 and are colored differently.

*Governmental dependence* is determined as the amount of grants received from the government as the percentage of the universities total income. The information regarding governmental independence was taken from annual report of the universities and university colleges year 2016 issued by the University chancellor's office (Universitetskansliämbetet, 2017). In the list regarding governmental dependence the universities were put in order starting with the university with the highest level of grants

received from the government as percentage of total income and ending with the university with the lowest percentage. The list presented in annex 2 was then divided in four proportional groups which resulted in intervals of 25 percent, each group is colored differently. According to annex 2 there is an uneven distribution regarding governmental dependence among universities because there is 18 universities in the interval of 75-100 percent and only one university in the interval of 0-25 percent namely Handelshögskolan in Stockholm.

By compiling lists for each characteristic category the selection of universities according to Denscombe (2016) focused on finding a balance between the four groups within the categories size, maturity and governmental dependence. This way, the focus is on representing the characteristics and not what is most common among universities in Sweden. Since the characteristic category of type of institution only consists of the two different aspects university and university collages this list was only divided in two groups. As a result we ended up with three lists with four groups each and one list with two groups. The next step was to start pick universities in order to select a number that was manageable time wise for this study and that was representing all characteristic categories expressed in our purpose. The selection was done manually from the lists and resulted in eight universities from all of the characteristic categories and groups. The universities selected are presented in table 4.2.6.

**Table 3. 2. Selected universities**

<b>Name of the university</b>	<b>Size</b>	<b>Type of institution</b>	<b>Maturity</b>	<b>Gov. dependence</b>
Stockholms universitet	27 656	University	139	67 %
Uppsala universitet	23 734	University	540	58 %
Umeå universitet	16 308	University	61	63 %
Kungliga tekniska högskolan	12 349	University	320	50 %
Högskolan i Gävle	6 174	University college	40	88 %
Högskolan i Halmstad	5 013	University college	44	80 %
Blekinge tekniska högskola	2 859	University college	28	76 %
Handels i Stockholm	1 696	University	108	19 %

### **3.2.8. Validity, reliability and generalization**

The validity of a study refers to its ability to show that the data is exact and accurate (Denscombe, 2016). It also refers to whether it really is investigating the concept it desires to investigate (Alvehus, 2013). In a qualitative study like this, it is according to Denscombe (2016) difficult to prove the credibility of the results, but there are some actions that could convince the reader that the results with reasonable probability can be considered as accurate. These actions can be seen as assurance that the results have been produced and controlled in accordance with good praxis. For example, qualitative studies should focus on a detailed examination of text or images in order to build a solid ground for the conclusions of the study (Denscombe, 2016). Because our thesis consists of a detailed content analysis that includes the different aspects of type of information, its quality and its location, the results could be considered valid. However, according to Denscombe (2016) each case study can be seen as a separate experiment that must be considered as temporary with the need to be confirmed by other similar studies in order to control the validity (Denscombe, 2016). In order to increase the validity of this study, there would have to exist more similar studies to confirm the results. But because there are a limited amount of studies researching how Swedish universities report on IC information, it is difficult.

Reliability refers to if the study would show the same results if it was made by other researchers (Denscombe, 2016; Alvehus, 2013). One way to prove the reliability of a study is to describe the reasonable procedures and decisions that were taken so that other researchers have the possibility to judge them, repeat the study and get the same results. Therefore, it is important to describe the study as a process as well as include details about method and decisions (Denscombe, 2016). This thesis offers an explanation in detail about the used method, for example why a multiple case study is used. It also explains how the coding checklist was constructed and how some rules were developed in order for the reader to understand the coding process. Regarding the coding of the annual reports, an interesting aspect is according to Denscombe (2016) the objectivity of the coding process.

Objectivity refers to whether qualitative research can be considered to be unaffected by the researcher. Because qualitative data, for example text and images, is often a product of interpretation and therefore the question rises about the involvement of the researchers' personal interpretation (Denscombe, 2016). By Scapens (2004) this is connected to the role of the researcher and when a study relies on available recourses like annual reports, the researcher can be considered as an outsider. Which is partly true in this case but since this thesis uses interpretations in the coding process, it could still be considered subjective. Therefore, some actions were made in order to make our interpretations regarding the IC items more objective. First, we did a test run on the first university and then did some changes to the coding checklist in order to, to some extent, avoid different interpretations toward similar information. Second, the annual reports were read and coded by the both of us at the same time. There were often discussions and sometimes disagreements about how the text and the images should be coded, however the rules that we developed facilitated the consistency of the coding process.

Generalization, refers to what extent the results of the study can be generalized and is also affected by to what extent the results can be transferred to other cases (Denscombe, 2016; Alvehus, 2013). The possibility regarding generalization is according to Denscombe (2016) connected to whether the results of one case can be applied to another similar case outside of the study. To make this judgment, the reader must have the information necessary about the specific case examined in order to compare to other cases. The information could for example include aspects regarding the size, location, maturity and type of organization (Denscombe, 2016). Because the purpose of this thesis is to explore and explain how universities with different characteristics report on IC information, information about characteristics is included. Since the selected universities are presented with their name it is also possible for the reader to collect additional information by him- or herself. The universities selected in this thesis represent a specific group within its characteristic category and therefore there is a possibility to apply the results on another university within the same group. However, this thesis does not aim to make generalizations, instead it aims to discuss possible reasons which is the reason for the relatively small number of universities selected. However, as future research there could be a possibility to statistically prove the results of this thesis in order to generalize.

## 4. Results and analysis

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*This chapter contains a presentation of the results from the content analysis together with the analysis. The first chapter aims to provide convincing explanations to results regarding all universities and the second chapter aims to provide possible reasons for IC reporting regarding the different characteristics.*

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### 4.1. All eight universities

All eight universities studied in this thesis include IC information in their annual reports, but to a different extent. Table 4.1 presents the frequency of all items presented divided by the different IC capitals of human, structural and relational. The meaning of the items is presented in Annex 1. The capital reported on the most is relational capital, and the least is structural capital. There is one item that no universities report on. The item is R13, which refers to information about doctorate programs with official quality certifications. An example of information that is presented instead is information about the professors and doctors, which refers to H1. The result that all universities report on IC information in their annual reports can be explained by the theoretical model of this thesis. The theoretical model presented in figure 2.1 suggests that IC reporting within universities can be seen a result of both internal and external pressures. Since this thesis examines how universities are reporting on IC information and not why, the theoretical model can only assist in reflections regarding convincing explanations and possible reasons for the results. According to the theoretical model the internal pressures can be explained partly by resource based view (RVB) and knowledge based view (KVB), where RVB puts emphasis on the importance and usage of internal resources in general and KVB discusses the importance of IC resources in universities specially. Together, RVB and KVB suggests that universities can create competitive advantages by using their IC resources effectively (Ahonen & Galabova, 2011). The reason that KVB suggests that IC resources is of importance in universities is because their main goals is to produce knowledge (Ramirez et al, 2017). The theoretical model also includes institutional diversity and suggests both external and internal pressures as possible reasons for diverse universities

regarding characteristics as well as differences in universities IC reporting, which can be seen in the different frequencies in table 4.1 and will be reflected on further down in this thesis. The last theory in the theoretical model is signaling theory and suggests that the intentions with IC reporting within universities is a result of external pressures, for example the competition from other universities. Because IC reporting is a voluntary activity for Swedish universities, signaling theory suggests that universities report on IC information in order to communicate their quality towards stakeholders and differentiate themselves from other universities (Dumay & Cai, 2015; Maingot & Zeghal, 2008; Scaltrito, 2016). Essentially, our theoretical model suggest a mixture of explanations that are derived from both external and internal pressures, that makes all universities have some kind of IC information in their annual reports.

According to table 4.1 the results show that relational capital, followed by human capital is the most frequent capital. This can be explained by internal pressures because according to our theoretical model, KVB makes a difference between tacit, explicit and implicit knowledge, where tacit knowledge such as human and relational capital, can be transformed to implicit knowledge such as structural capital. Because universities are dependent on the knowledge of the students and staff, human and relational capital are important and structural capital can be used to represent this knowledge in different forms (Glauber et al, 2014). Therefore, in order to create structural capital, there must be both human and relational capital and as a consequence it is logical to assume that human and relational capital stands for the largest part of the IC in universities. The theoretical model in this thesis regarding size also argues that universities should be more able to report more information about an asset they have more of. Therefore, this thesis argues that the statement above and the fact that structural capital can be seen as a result of relational and human capital could be seen as convincing explanations to the result that human and relational capital is the most frequent used. Another explanation for relational capital being most reported on is according to the theoretical model external pressures explained by signaling theory. According to signaling theory universities aims to send signals to society about their performance in order to differentiate themselves from other universities (Maingot & Zeghal, 2008). That relational capital got the highest frequency can partly be explained by that it includes 16 items, compared to 13 and 8 in human and

structural capital. However, the results of total items according to table 4.1 states that the frequency connected to relational capital is five times as much as the frequency of structural capital and three and a half times as human. When the annual reports were read it got clear to us as researchers that the universities to a large extent connects performance with engagement with society regarding research, students connections to future employers in terms of different organizations and companies as well as relationships with other universities. Below is an example from Umeå universitet:

*"Representatives from Umeå universitet continuously faces and interacts with external actors from both the industry and society in general. Our interaction with public and private actors gives us a mutually exchange and at the same time contributes to a better education and research quality"* (Umeå universitet, 2017).

Information regarding relational capital was in the annual reports described both in connection to a larger strategy of the university as the example above and in connection to specific communications efforts or specific projects. In our results 82 percent of all relational items were presented in a qualitative term. Which also matches our impressions as readers of the annual reports since the information regarding relational capital in our opinion were more integrated with other aspects in the university compared to human and structural capital. For example when information about innovation ability, which refers to structural capital, was presented it was often in connection to some kind of collaboration with other organizations, which refers to relational capital. This can in turn be connected to what was stated in the introduction about the linkage between different types of IC assets that was pushed forward by Mouritzen (2001) who put emphasis on the need for organizations to tell a story about IC assets rather than report on specific items. This could also be connected to the theoretical model of this thesis since this expressed "need" can be seen as an external pressure within signaling theory that affects the universities intentions regarding telling a story about IC assets in their annual reports, as a way to send signals about their performance. Below are two examples of information regarding relational capital from Högskolan i Gävle and Uppsala universitet, the first one refers to an example of a more specific project connected to students and the second one refers to

information about collaboration with other organizations and well as an innovation project.

*"University days, also known as days when the university welcomes potential students from other schools, have been arranged during two occasions in 2016 (with 300 and 600 students), the university have also arranged "open house" during the year with approximately 300 visitors"(Högskolan i Gävle, 2017).*

*"Uppsala university is also participating in other national and international projects where ESS (European Spallation Source), Max IV-laboratory and CERN (the European organizations for nuclear research) are the most prominent" (Uppsala universitet, 2017).*

#### **4.1.1. Human capital**

Regarding items belonging to human capital, items H1, H8 and H9 are according to table 4.1 reported on the most, the meaning of every item will be further explained but can also be find in Annex 1. H1 refers to information about of doctors and professors. An example is from the annual report of Umeå universitet: *"The cost per full-year doctoral student has increased with 97 tkr or 9 % year 2016 compared with year 2015"* (Umeå universitet, 2017). Because it refers to the cost the information was coded according to the quality measure of financial terms. Another example is from the annual report of Kungliga tekniska högskolan; *"The number of adjunct professors by the end of 2016 is 63, where 9 are women and 54 are men"* (Kungliga tekniska högskolan, 2017). This can also be seen as an example where different types of IC information is integrated with each other, in this case it is information about doctors which refers to human capital and information about gender proportions which refers to relational capital. Furthermore, H8 which is the second most used item within human capital refers to information about publications and an example is from the annual report of Högskolan i Halmstad; *"The researchers from the university published 134 articles in international scientific journals in 2016"* (Högskolan i Halmstad, 2017). Another example from Högskolan i Gävle with more detailed information about publications is presented below:

*“The total amount of publications by the university college that have been registered in DiVA is slightly larger than in the previous follow up. For year 2016 an increase of 19 percent can be noted compared to last year. The amount of reviewed scientific articles has continued to increase with 34 percent compared to last year, while the amount of conference papers and books and book chapters has decreased” (Högskolan i Gävle, 2017).*

Moreover, H9 which was the third item most reported regarding human capital refers to information about continuing education and training among staff. An example is from the annual report from Uppsala universitet; *“During the year, pedagogical training courses was directed to teachers as well as support for different development projects and evaluations” (Uppsala universitet, 2017).* Another example is by Umeå universitet; *“A consequence of the initiative of interactive environments has been continuing education of teaching staff in new, innovative pedagogies, so that the new facilities can be utilized to its full capacity” (Umeå universitet, 2017).*

Compared to the other items on the checklist regarding human capital in Annex 1, H1, H8 and H9 which are the items most reported on can be seen as the items most connected to the knowledge of individuals, since they related to information about doctors and professors, publications and continuing education. Compared to for example the least reported items H6 and H10 according to table 4.1 which refers to information about duration of teachers and researchers and information about evaluation of continuing education, which instead can be seen as more connected to the opinions of the individuals. This could perhaps mean that universities put more value on reporting information about the knowledge among staff rather than their opinions. However, as seen in table 4.1 the fourth item most reported on regarding human capital is information about the wellbeing and sick-absence of staff which indicates that universities want to show the health of the staff. This can be explained by the theoretical model of this thesis and the internal perspective of KVB that implies the importance of knowledge in the competition with other universities, because knowledge is according to Sveiby (2001) the core and all recourses in an university are derived from human actions. Since knowledge

also is connected to individuals, this thesis suggests that their health is important as well. On explanation to different levels of reporting in regard to specific IC items is that different items according to Vergauwen et al. (2007) are connected to different costs regarding the collection of information. Essentially, the theoretical model of this thesis provide explanations that information about doctors and professors, publications and continuing education is the most reported items within human capital since it presents the knowledge of the employees. As well as why the health is the fourth most reported item because it is connected to the individuals. Why opinions of the staff is the least item reported on within human capital can be explained by the fact that universities according to RVB and KVB aims to use their internal resources in an effective way in order to gain competitive advantages. Because of limited resources and costs connected to collection of IC information, universities have to choose rational about what information they will report on.

#### **4.1.2. Structural capital**

Regarding items belonging to structural capital it is according to table 4.1 the item S3 that by far got the highest frequency, almost twice the number as the runner up which is item S4. S3 refers to information about R&D investments and projects under development and S3 refers to information about innovation ability. Almost all universities reported information about their R&D investments and projects, the exception is Handels in Stockholm. An example is by Högskolan i Gävle; *“During 2016 a number of projects started with the aim to strengthen the university’s work for a sustainable development”* (Högskolan i Gävle, 2017). Another example is by Kungliga tekniska högskolan; *“A new project has started at KTH innovation which aims to increase the number of women that takes part of innovation support at KTH”* (Kungliga tekniska högskolan, 2017). Examples of S4 which is the second most reported item within structural capital and refers to information about staff and organization innovation ability is by Högskolan i Halmstad: *“Two new exciting lab environments were opened during 2016: Digital and laboratory center and Fab Lab. Both environments were established to meet the challenge with digitalization”* (Högskolan i Halmstad, 2017). From the perspective of our theoretical

model R&D investments and projects and innovation ability which are the items most reported on within structural capital, can within the internal perspective of KVB be seen as an example where tacit knowledge such as human and relational capital have been transferred to structural capital such as the projects and the laboratories mentioned above. Furthermore, according to signaling theory this can be described as an attempt by the universities to communicate their innovation and research abilities to the external environment in order to compete for the best students (Maignot & Zeghal, 2008). It could also be described as an attempt to send signals to the government that they are allocating their funds in an acceptable way (Gordon et al, 2002).

Regarding structural capital there were two universities that stood out when reading the annual reports. The universities were Högskolan i Gävle and Högskolan i Halmstad. The results show that Högskolan i Gävle has the highest amount of information presented regarding item S4, information about innovation ability, of all universities where the university with the second highest amount is Blekinge Tekniska Högskola and has half as much as Högskolan i Gävle. As researchers and as readers of the annual report of Högskolan i Gävle we got the impression of a high innovation ability because there were much information about different innovations platforms and ambitions compared to the other annual reports, an example is:

*According to the platform of Strategy 2020 the ambition of the university is to be a recognized hub and coordinated effort in the research and innovation operation within the region. Through collaboration with other universities, the industry, the society and non-profit organizations the university wants to have the ambition to create knowledge, methods, services and products that enhances the attraction of the region and ability to meet the challenges of tomorrow" (Högskolan i Gävle, 2017).*

The results regarding information about innovation ability in Högskola i Halmstad, S3 in Annex 1, shows a low frequency of only three occasions compared to Högskolan i Gävles 40 occasions. However this results is not in line the impressions we got as readers of the annual report since there were a lot mentioning about their new innovation environments, digital laboratory center and Fab Lab which is described in the examples below:

*"...digital laboratory center (DLC) is a creative, high technological and laboratory environment with focus on teaching and culture. DLC strengthens education because students and reserachers can participate in the formation of the digitalized society"* (Högskolan i Halmstad, 2017).

*"... Fab Lab, a collaboration with Massachusetts Institute of Technology in USA, with focus on digital production, 3D techniques and development of sustainable innovations"* (Högskolan i Halmstad, 2017).

These two innovation environments were mentioned thorough out the text but because of our rules regarding the coding manual, one environment was only coded once.

#### **4.1.3. Relational capital**

Regarding relational capital there are several items that according to table 4.1 got high frequency. One example is R4, which refers to information about gender proportions among students and teachers. An example is by Uppsala universitet; *"For the whole university there is more women than men that studies at education at first level and advanced level, but the distribution between men and women lies within the equal interval"* (Uppsala universitet, 2017). Another one is R10, which refers to information about collaborations agreements on projects and activities with companies and organizations. An example is by Umeå universitet; *"Researchers at Umeå universitet are also appreciated collaborators within different research projects, which for instance is manifested by a strategic collaboration agreement with Volvo which was signed during 2016"* (Umeå universitet, 2017). Also R12 got high frequency, which refers to information about communication with stakeholders. An example is by Blekinge tekniska högskola; *"During 2016 did the recruitment efforts consist mainly of participation at education fairs, visits at high schools and at other education coordinators and also information to potential students in other contexts"* (Blekinge tekniska högskola, 2017) .

According to signaling theory universities report on IC information with the intention to stay accountable to the external environment as well as to attract students and potential staff members (Maingot & Zeghal, 2008) which also is illustrated by the theoretical model of this thesis. Regarding relational capital the items most reported on includes aspects of collaborations and communication with other actors which can be suggested to relate more to attract students and staff members rather than staying accountable for something. Because compared to other less used items like R1 which refers to information about the drop-out rate, collaborations and communication seems more connected to attracting students and staff. However, two of the least reported items are R7 and R8 which both includes information about students employments after graduation, which could be seen as valuable information for potential students, and therefore it makes it difficult to imply that universities uses intellectual capital foremost to attract students. However, perhaps their aim with their IC reporting is to attract students, but because different IC items according to Vergauwen et al. (2007) are connected to different costs regarding the collection of information, universities focus on items where the information is more available. This is in line with our results because information regarding students employments after graduation could be seen as less available information since these students no longer are within the universities.

Table 4. 1. Total frequency of all items

Human Items	Frequency	Structural items	Frequency	Relational items	Frequency
H1	79	S1	5	R1	17
H2	17	S2	7	R2	63
H3	13	S3	116	R3	89
H4	29	S4	66	R4	368
H5	13	S5	39	R5	49
H6	4	S6	34	R6	40
H7	35	S7	12	R7	3
H8	76	S8	4	R8	1
H9	69			R9	52
H10	1			R10	241
H11	35			R11	56
H12	6			R12	117
H13	25			R13	0
				R14	90
				R15	104
				R16	99
<b>Total of items</b>	<b>402</b>		<b>283</b>		<b>1389</b>

#### 4.1.4. Quality measures

As described in the method chapter the IC items were also coded after some quality measures. The first measure refers to whether the information was presented in qualitative or quantitative terms. In table 4.2 the results are presented, which shows that approximately only a fifth of the IC information is presented in a quantitative terms. Our rule when coding the information was to code according to the quality measurement in majority of the occasion, which resulted in almost all information in the text being coded as qualitative and the information in tables coded as quantitative. An example of information that was presented qualitatively about foreign students is by Uppsala universitet:

*" The amount of incoming students within the university's exchange program is continued higher than the amount of outgoing students. The amount of incoming students has been*

*relatively constant during the last five years. The amount of outgoing students has varied over the years, but there is no clear trend. Most of the incoming students come from Germany and U.S. The biggest recipient of the university's outgoing students is U.S, follows by Great Britain” (Uppsala universitet, 2017).*

The fact that most of the information is presented qualitatively could perhaps be explained by that it is important to connect the three capitals of IC, because they are, especially in knowledge intensive organizations as universities, all related to each other (Secundo et al, 2015). It could also be logic to assume that human, structural and relational capital easier can be connected to each other in annual report when described qualitatively, instead of quantitative in a table. Because in a longer paragraph more information and more varied information can be included and connected, compared to information presented quantitative in a table. This is also related to the importance for organizations to not only report on specific items, but instead create visualizations and tell a story about their IC assets (Mouritsen, 2001) which is perhaps easier accomplished through text than in tables. As stated before, the "need" for universities to tell a story can be seen as an external pressure connected to signaling theory in the theoretical model of this thesis.

When reading the annual reports, Stockholms universitet and Kungliga Tekniska Högskolan are the universities that stood out the most regarding the quality measure of quantitative and qualitative. According to table 4.2 Stockholms universitet present their information quantitative to the largest extent and Kungliga Tekniska Högskolan to the smallest extent. The annual report of Stockholms universitet contains tables of quantitative information in several sections, for example in the presentation of research projects and collaborations with other organizations. Which is sections that by the majority of the universities, including Kungliga Tekniska Högskolan, is reported on in more qualitative terms. For example, the annual report of Kungliga Tekniska Högskolan instead mainly focuses its quantitative information on specific sections such as gender proportions, performance rate and examination rate.

**Table 4. 2. Quantitative and qualitative**

<b>University</b>	<b>Qualitative items</b>	<b>%</b>	<b>Quantitative items</b>	<b>%</b>
Stockholms universitet	107	72	41	28
Uppsala universitet	249	84	47	16
Umeå universitet	268	79	70	21
Kungliga tekniska högskolan	313	91	32	9
Högskolan i Gävle	217	75	73	25
Högskolan i Halmstad	200	78	57	22
Blekinge tekniska högskola	309	80	75	20
Handels i Stockholm	16	100	0	0
<b>Total</b>	<b>1679</b>	<b>81</b>	<b>395</b>	<b>19</b>

The second quality measure refers to if the information was presented in financial or non-financial terms. Table 4.3 presents the results, which states that only three percent of the information was presented in financial terms. One university that almost only presented the IC information in non-financial terms is Kungliga tekniska högskolan. The university that presented the most financial information regarding total items is Handels i Stockholm, with 13 percent. The only example of information that was presented financial by Kungliga tekniska högskolan is; "The average cost for a doctor at KTH is calculated to 1 556 tkr. Corresponding cost for 2015 and 2014 was 1 483 tkr respectively 1 460 tkr" (Kungliga tekniska högskolan, 2017). When reading the annual reports it appeared that most of the financial information presented in the annual reports is connected to different costs, which is assumed by this thesis to be interesting information specially to funders like government or private actors. This result can be explained by the theoretical model of this thesis since it is according to the external perspective of signaling theory, relevant for universities to signal about their financial activities in order to be transparent and decrease information asymmetry between universities and their funders (Dumay & Cai, 2015). Furthermore, the fact that Handels i Stockholm is the university that presents the most information in financial terms can be explained that their annual reports is only 36 pages, where the financial information constitutes 25 pages. This can be compared to the other university's annual reports that consist of between 68

and 102 pages, where the financial analysis constitutes a smaller part of the information in the annual reports.

**Table 4. 3. Financial and non-financial**

<b>University</b>	<b>Financial items</b>	<b>%</b>	<b>Non-financial items</b>	<b>%</b>
Stockholms universitet	10	7	138	93
Uppsala universitet	10	3	286	97
Umeå universitet	8	2	330	98
Kungliga tekniska högskolan	1	0	344	100
Högskolan i Gävle	10	3	280	97
Högskolan i Halmstad	14	5	243	95
Blekinge tekniska högskola	9	2	375	98
Handels i Stockholm	2	13	14	88
<b>Total</b>	<b>64</b>	<b>3</b>	<b>2010</b>	<b>97</b>

The next quality measure is whether the information is presented in a historical, non-time specific or forward looking way. The majority of the information is according to table 4.4 presented in a historical way, where Umeå universitet have the highest percentage, namely 82 percent. The information presented in a forward looking way stands for the smallest part of the information, where Blekinge tekniska högskola have the highest percentage of 12 percent. The fact that Blekinge tekniska högskola have the highest percent of information presented in a forward-looking way is because they included much information about their visions, goals and strategies which refers to the future. An example of information presented in a forward looking way by Uppsala universitet is;

*“The need of continuing education within integration and inclusion is expected to remain high during 2017 and several years to come” (Uppsala universitet, 2017).* Another example is by Blekinge tekniska högskola; *“The concrete goals was that the university college would have at least 30 first applicant students to every educational program” (Blekinge tekniska högskola, 2017).*

The fact that the most of the information was presented in a historical way can be explained by the theoretical model of this thesis since the intentions of the universities IC reporting could be to show their stakeholders how they have allocated their funds during the year. According to signaling theory, universities want to send signals to the government of their productive behavior in order to get approval and funds (Maingot & Zeghal, 2008; Scaltrito, 2016) which means that they have to report on their historical behavior in order to signal accountability and transparency to the government and other funders.

Some information was also presented as non-time specific, which could for example be information about ongoing projects and collaborations. This is also a way for the universities to signal about their ongoing activities they have an impact on to stakeholders in order to seem more interesting and different compared to other universities, for example to attract new students (Maingot & Zeghal, 2008). An example of IC information reported in a non-time specific way is by Handels in Stockholm: *Handels Högskolan in Stockholm is the leading school of economics among nordic countries and Baltics and has high reputation in Sweden as well as international"* (Handels in Stockholm, 2017).

**Table 4. 4. Historical, non-time specific and forward looking items**

<b>University</b>	<b>Historical</b>	<b>%</b>	<b>Non-time specific</b>	<b>%</b>	<b>Future</b>	<b>%</b>
Stockholms universitet	108	73	25	17	15	10
Uppsala universitet	226	76	56	19	14	5
Umeå universitet	278	82	49	15	11	3
Kungliga tekniska högskolan	229	67	89	25	27	8
Högskolan i Gävle	191	66	89	31	10	3
Högskolan i Halmstad	204	79	38	15	15	6
Blekinge tekniska högskola	278	72	59	15	47	12
Handels i Stockholm	7	44	9	56	0	0
<b>Total</b>	<b>1521</b>	<b>73</b>	<b>414</b>	<b>20</b>	<b>139</b>	<b>7</b>

The last quality measure examined is whether the information is presented in a general or specific way. Majority of the information is according to table 4.5 presented in a specific way, where Högskolan i Gävle have the highest percentage, namely 82 percent. An example by Högskolan i Gävle regarding specific information about graduation rate is:

*“During 2016 1 466 graduations have been issued, which is an increase of just over 100 graduations relatively last year. 38 % of the issued graduations is vocational graduation and 62 % is general graduations, a distribution that have been relatively constant during the reported period”* (Högskolan i Gävle, 2017).

The university that had the highest percentage of general items was Stockholms universitet, with 61 percent. An example of information with more general character is by Stockholms universitet; *“The number of disputed teachers is in general at the same level as previous year, and generally is the percentage of disputed teachers relatively high at Stockholms universitet. It is especially high within the science area”* (Stockholms universitet, 2017). The fact that the most of the information is presented in a specific way can perhaps be explained by signaling theory in our theoretical model because of the universities intentions to be as trustworthy as possible, and describe detailed examples to satisfy stakeholders. Högskolan i Gävle, which is a high governmental dependent university, present much information in a specific way according to table 4.5. This can be explained by the external perspective of our theoretical model since according to institutional diversity different funding organizations result in different kind of pressures which affects the universities intentions with their IC reporting. According to Gordon et al (2012) organizations more dependent on the government could be assumed to be more transparent and accountable, which in turn can be connected to universities presenting IC information in a more precise way.

**Table 4. 5. General and specific items**

<b>University</b>	<b>General items</b>	<b>%</b>	<b>Specific items</b>	<b>%</b>
Stockholms universitet	61	41	87	59
Uppsala universitet	101	34	195	66
Umeå universitet	103	30	235	70
Kungliga tekniska högskolan	104	30	241	70
Högskolan i Gävle	53	18	237	82
Högskolan i Halmstad	58	23	199	77
Blekinge tekniska högskola	100	26	284	74
Handels i Stockholm	5	31	11	69
Total	585	28	1489	72

#### **4.1.5. Location of IC items**

When reading and coding the information in the annual reports the location of the information was also taken into consideration. The coding of the location referred to under which headline the information is presented. Because all the universities had similar headlines, some headlines are in table 4.6 merged into one, which resulted in 12 headlines. The distribution between the headlines is presented in table 4.6. The headline containing most of the IC information reported was *education at basic level and level*, where information presented mainly referred to students, gender proportions, projects and foreign students. The second most common headline is *research and education at research level*, where information about different projects and professors as well as doctors were presented. The third largest headline is *interaction with surrounding community* where information was presented about collaborations with organizations and companies. The results are in line with the theoretical model of this thesis because teaching and research are according to Loi, Chiara and Gurado (2015) two of the most important strategies within universities. Aside from teaching and research, the headline *interaction with surrounding community* can be connected the concept of universities third mission. Third mission activities refer according to Loi et al. (2015) to social activities between universities, companies and the government. The strategy to include third mission activities in addition to teaching and research is something that has

increased in recent years. Third mission activities of universities aim to contribute to the society (Loi et al, 2015). According to RVB, the recourse perspective of an organization includes such strategic aspects in terms of an internal usage of resources (Kristandl, 2007). And according to signaling theory, reporting on strategies about teaching, education and third mission activities related to IC is a way to signal so society about positive behavior (Dumay & Cai, 2015). The order of the headlines in table 4.6 also illustrates the order of the headlines in the annual reports.

**Table 4. 6. Headlines**

<b>Headline</b>	<b>Percentage, %</b>
The principals foreword	2
Introduction/the year in brief/summary	6
Organization	1
Education at first level and advanced level/education/educational programs	38
Research and education at research level/world leading research	21
Common to the operational areas	7
Internal control/quality	2
Interaction with the surrounding community/sustainability	12
Staff/employees	5
Student union	0
Financial accounting/analysis/overview	3
Essential information	3

#### **4.1.6. Images of IC elements**

During the coding of the annual reports, the images were also taken into consideration. In all annual reports there are in total 61 images where 51 could be related to IC, which is 84 per cent. The rest, 16 percent are not related to IC with or without the help of surrounding text. Of those images that are related to IC, 20 percent is related to human capital, 47 percent to structural capital and 33 percent to relational capital. Besides type of IC capital, the images were also coded regarding to their element which is the second step before the specific items, presented in Annex 1. The reason why structural capital stands for the highest percentage is because many of the universities report images related to the

element of innovation ability, for example images of laboratories and technical equipment. Regarding human capital, a large part of the images can be connected to the element of academic and professional qualifications of staff, for example images of staff. Concerning relational capital most of the images can be related to the element university image and student satisfaction, for example images of foreign students and students unions.

Regarding the differences between the universities, there were two universities that did not have any images in their annual reports. These are Stockholms universitet and Kungliga tekniska högskolan. Those universities that reported the most images in their annual reports are Högskolan i Gävle and Högskolan i Halmstad, with 22 respectively 24 images. However, of Högskolan i Gävle's 22 images it was only 14 that could be related to IC. All of Högskolan i Halmstad's 24 images could be related to IC. The rest of the universities annual reports contains between 2-7 images, where most of them could be related to IC. That Högskolan i Gävle and Högskolan i Halmstad have the most images related to IC could be connected the fact that they are the most governmental dependent universities. They could therefore according to our theoretical model be assumed to be more pressured by the government to report more IC information and be more transparent because of their strong relationship with the government (Gordon et al, 2012). And therefore are reportin more IC information in terms of images as a way for them to stay accountable (Wijaya & Krismiyati, 2013).

## **4.2. University characteristics**

The section below presents the results and the analysis regarding different university characteristics, where possible reasons for differences in IC reporting will be reflected upon.

#### 4.2 1. Size

Table 4.7 presents the total items divided by human, structural and relational capital for each university. In table 4.7 the universities are ordered by the size groups developed in the selection of the universities where the largest university is colored blue and after that pink, green and purple. The table shows that there is no clear pattern between the total number of IC reporting between the universities, with consideration to size. This is not in line with the expected results since the theoretical model suggests that larger universities have more pressure from the government and therefore they should report more on IC information (Broberg et al, 2012). Larger organizations also have a higher level of total resources, which should increase their IC reporting (Whiting & Miller, 2008).

One possible reason for the results regarding the same level of IC reporting among smaller and larger universities in this study could be because of forces related to isomorphism, which makes organizations more similar if faced the same conditions. Isomorphism is connected to institutional diversity and refers to the external forces in the theoretical model of this thesis. When organizations within the same field are facing the same conditions they are according to DiMaggio and Powell (1983) becoming more similar in regard to for example outputs (DiMaggio & Powell, 1983) which could refer to IC reporting. Furthermore, this thesis implies that because all Swedish universities exist in the same field of education and research organizations, they are facing the same conditions in terms of the need to attract stakeholders (a motive for reporting IC information) and are therefore perhaps generating somehow similar outcomes.

Table 4. 7. Human, structural and relational capital divided by size

University	Human capital	Structural capital	Relational capital	Total
Stockholms universitet	31	15	96	142
Uppsala universitet	55	41	200	296
Umeå universitet	74	46	218	338
Kungliga tekniska högskolan	54	38	252	344
Högskolan i Gävle	59	51	180	290
Högskolan i Halmstad	65	35	157	257
Blekinge tekniska högskola	63	45	276	384
Handels i Stockholm	1	5	10	16

Table 4.8 presents the five most frequent items for each university divided into size groups. In some cases there were items with the same frequencies, which explains why there are six items for some universities. From the table it can be seen that the most frequent items for almost all universities are R10 and R4, except Högskolan i Gävle and Handels i Stockholm, where the most frequent items is S3 respectively R11. R10 includes information about collaborations with companies and organizations and R4 to gender proportion among students and teachers. S3 refers to information about R&D projects and R11 includes information about stakeholder opinion of the university which is connected to reputation.

A possible reason for the result regarding information about stakeholders opinions connected to reputation (R11) being the most frequently used item in Handels i Stockholm could be that it wants show its prestige in order to attract the best students. Because Handels i Stockholm is small, it could seem logic that they want to signal about their high quality in terms of reputation instead of information about collaborations and gender proportions, in line with signaling theory (Dumay & Cai, 2015) and the external perspective of the theoretical model. That the most frequent item for Högskolan i Gävle is information about R&D projects (S3) is connected to the results regarding the large extent of specific information within Högskolan i Gävle. Since they, compared to the rest of the universities, report on R&D projects in a more specific term, for example: *"Within biology, research is for example conducted about biodiversity, sustainable development,*

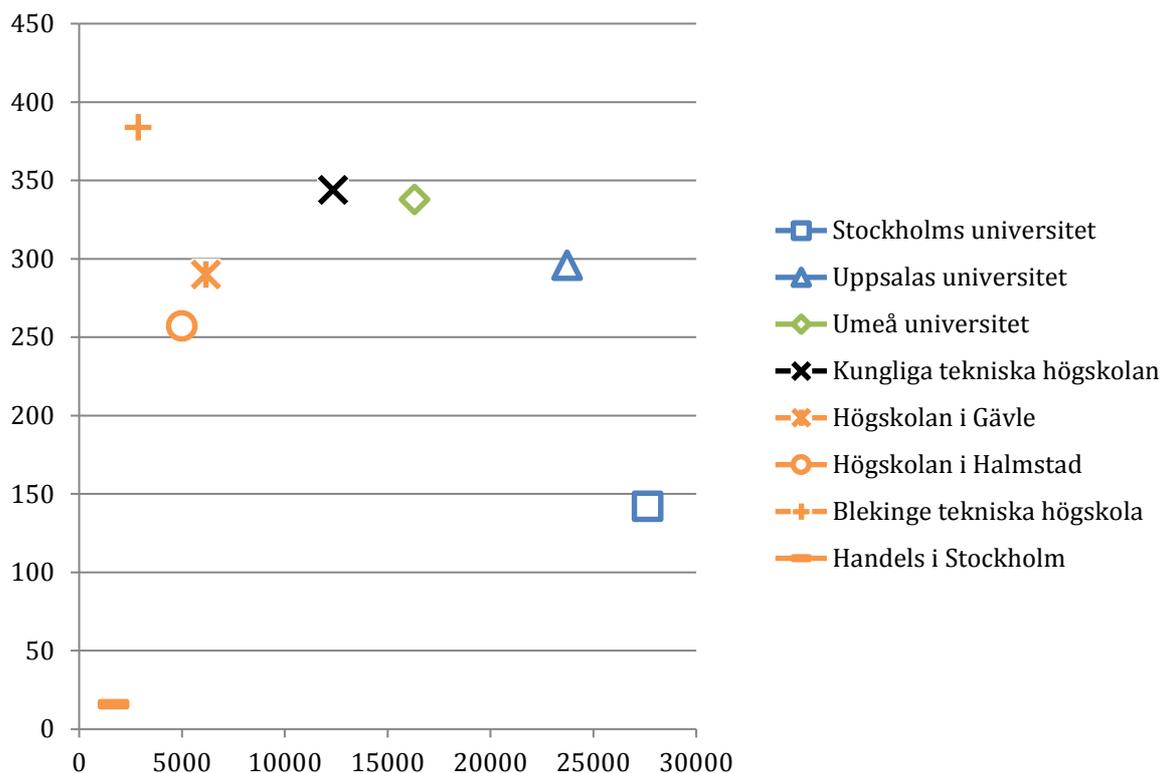
*ecology, physiology, micro organisms and insects communications"* (Högskolan i Gävle, 2017).

**Table 4. 8. Most frequent items divided by size**

<b>University</b>	<b>The most frequent items</b>
Stockholms universitet	R10, R4, R12, R14 and H7
Uppsala universitet	R4, R10, R16, R15, R12 and R14
Umeå universitet	R4, H1, R12, R10 and S3
Kungliga tekniska högskolan	R4, R10, R15, S3 and R12
Högskolan i Gävle	S3, R4, R10, R15 and R16
Högskolan i Halmstad	R4, R10, H1, R14, R12 and R3
Blekinge tekniska högskola	R4, R10, R3, R12, S3 and R14
Handels i Stockholm	R11, S5, R10, S6 and H2

Diagram 4.1 visualizes the results of the total IC items reported for all universities. The labels are colored after the different size groups in Annex 2. When looking at the figure a pattern can be imagined that was not clear just looking at the number of the total IC reporting for every university in table 4.7. The pattern that can be imagined is a downward trend from Blekinge tekniska högskola to Stockholms universitet. Blekinge tekniska högskola is categorized as a small university and Stockholms universitet as the largest. Another university that is colored blue is Uppsala universitet that also is categorized as a large university. In the figure it can be seen that these two largest universities report less IC information than smaller ones (Umeå universitet, Kungliga tekniska högskolan and Blekinge tekniska högskolan).

**Diagram 4. 1. Size and number of total IC items**



Clarification: Size as number of registered students on the x-axis and number of IC items on the y-axis.

### 4.3. Maturity

Table 4.9 presents the number of total items regarding human, structural and relational capital per university divided after the maturity groups developed in the university selection. The oldest group is in table 4.9 colored blue followed by the younger groups which are in order and colored pink, green and purple. When looking at the total IC items per university it can be seen that the two oldest universities and the four youngest universities report more IC information compared to the two universities in the middle, which are Stockholms universitet and Handels i Stockholm. These results are in line with the expected results of this thesis since the results suggests that both younger and older universities are motivated to report on IC information. Older universities have for example had more time to build up their IC recourses and are therefore prone to report IC information (Whiting & Miller, 2008). However, younger universities are also motivated to report IC information because their future can be seen as more uncertain because of a

lower level of establishment (White et al, 2007). Because both younger and older universities exist in the same field as organization within education and research, one possible reason for the results can according to the theoretical model be the external forces of isomorphism. Since isomorphism according to DiMaggio and Powell (1983) states that organizations facing the same conditions tend to be similar. Another possible reason could be that younger universities mimic older universities regarding internal structures and strategies and in order to gain legitimacy (Hallonsten & Hugander, 2014). Younger universities may therefore take after older, more established, universities and their reporting on IC. In doing so, younger universities can signal to for example students and funders that they also have knowledge and resources although they are a newer universities.

**Table 4. 9. Human, structural and relational capital divided by maturity**

<b>University</b>	<b>Human capital</b>	<b>Structural capital</b>	<b>Relational capital</b>	<b>Total</b>
Uppsala universitet	55	15	96	296
Kungliga tekniska högskolan	54	38	252	344
Stockholms universitet	31	15	96	142
Handels i Stockholm	1	5	10	16
Umeå universitet	74	46	218	338
Högskolan i Halmstad	65	35	157	257
Högskolan i Gävle	59	51	180	290
Blekinge tekniska högskola	63	45	276	384

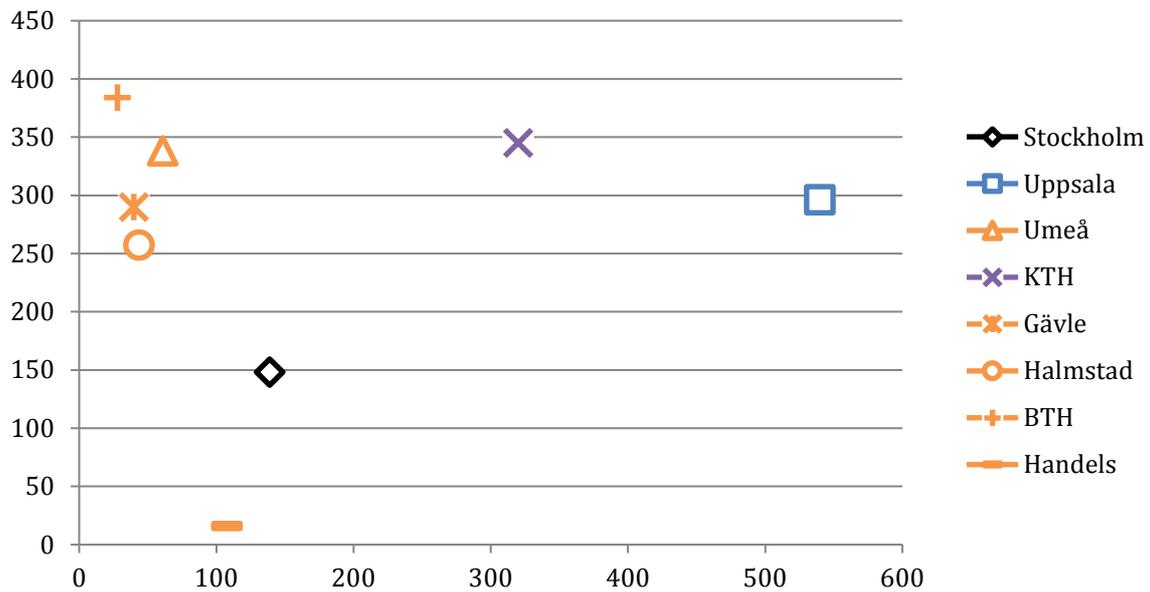
Table 4.10 presents the most frequent items reported on per university divided in groups regarding maturity. Table 4.10 does not show a clear pattern but an item that stands out is R11 because it exists among the most frequently reported items only for the university Handels i Stockholm. The item R11 refers to information about stakeholders opinion of the university which is connected to reputation. Which have already been reflected upon in this chapter.

**Table 4. 10. Most frequent items divided by maturity**

<b>University</b>	<b>The most frequent items</b>
Uppsala universitet	R4, R10, R16, R15, R12 and R14
Kungliga tekniska högskolan	R4, R10, R15, S3 and R12
Stockholms universitet	R10, R4, R12, R14 and H7
Handels i Stockholm	R11, S5, R10, S6 and H2
Umeå universitet	R4, H1, R12, R10 and S3
Högskolan i Halmstad	R4, R10, H1, R14, R12 and R3
Högskolan i Gävle	S3, R4, R10, R15 and R16
Blekinge tekniska högskola	R4, R10, R3, R12, S3 and R14

Figure 4.2 visualizes the total IC reporting for all universities, colored after the different groups of maturity. As stated before both younger and older universities report on IC information to similar extent. The university colored blue is the oldest university, which report at the same level as the yellow ones that are the youngest.

**Diagram 4. 2. Maturity and number of total IC items**



Clarification: Maturity as age on the x-axis and number of IC items on the y-axis.

#### 4.4. Type of institution

Table 4.11 presents the frequency of human, structural and relational capital for each university divided by type of institution where the blue color stands for university and the purple for university college. From the table can it be seen that there is no difference between the two types, as them both show similar levels of IC reporting. However, of those universities classified with university status have a larger interval between the university that reports the most and the one that reports the least. That both universities and university colleges report on IC to a similar extent is not in line with expected results, where universities was expected to report on more IC information than university colleges because of their general permission to issue doctoral examinations (prop.2008/09:134). Because it can be seen that these universities have higher quality, it was expected that they would report on IC to a greater extent according to signaling theory (Dumay & Cai,

2015). The results are instead showing that university colleges report on IC to the same extent as universities, perhaps because they want to show their quality in other ways than universities that may just rely too much on their reputation. University colleges may therefore make more effort to attract new students and funders, something that maybe universities can do just by be called a university and have the general permission to issue doctoral examinations. This thesis also suggests that a possible reason for the fact that university collages report on IC to the same extent as universities can be because of external isomorphism forces. Perhaps university colleges want to mimic universities with university status since they are seen as universities of higher quality regarding research on doctoral level. By doing so university colleges can to some level signal that they are having the same knowledge and resources as universities.

**Table 4. 11 Human, structural and relational capital divided by type of institution**

<b>University</b>	<b>Human capital</b>	<b>Structural capital</b>	<b>Relational capital</b>	<b>Total</b>
Stockholms universitet	31	15	96	142
Uppsala universitet	55	15	96	296
Umeå universitet	74	46	218	338
Kungliga tekniska högskolan	54	38	252	344
Handels i Stockholm	1	5	10	16
Högskolan i Gävle	59	51	180	290
Högskolan i Halmstad	65	35	157	257
Blekinge tekniska högskolan	63	45	276	384

Table 4.12 presents the most frequent items for each university divided by type of institution. From the table can it be seen that there is no clear difference of the items between the universities and the two groups. In the group of universities with university status all share the same item most frequently used except for Handels i Stockholm where R11 is the most frequent item. As analyzed before an explanation could be that they want to signal about their quality to funders as R11 refers to information about reputation.

**Table 4. 12. Most frequent items divided by type of institution**

<b>University</b>	<b>The most frequent items</b>
Stockholms universitet	R10, R4, R12, R14 and H7
Uppsala universitet	R4, R10, R16, R15, R12 and R14
Umeå universitet	R4, H1, R12, R10 and S3
Kungliga tekniska högskolan	R4, R10, R15, S3 and R12
Handels i Stockholm	R11, S5, R10, S6 and H2
Högskolan i Gävle	S3, R4, R10, R15 and R16
Högskolan i Halmstad	R4, R10, H1, R14, R12 and R3
Blekinge tekniska högskolan	R4, R10, R3, R12, S3 and R14

#### **4.5. Governmental dependence**

Table 4.13 presents the distribution of human, structural and relational capital for each university divided by governmental dependence where Handels i Stockholm is the least governmental dependent university. The results indicate that there is no large difference between the different universities and groups besides from Handels i Stockholm, that relatively report less on IC. This is to some extent not in line with the expected results because universities that are more governmental dependent have a stronger relationship with the government and have therefore a stronger governmental monitoring, which was expected to increase the expectations to be more transparent (Gordon et al, 2002). However, the theoretical model of this thesis also argued for the opposite because governmental independent universities are also dependent on funds but from private funders. But since universities according to Wijaya and Krismiyati (2013) mainly uses the annual reports in order to stay accountable and other communications channels in order to build their brand, the signals aimed at private funders were suggested to exist in for example networking environments instead.

**Table 4. 13. Human, structural and relational capital divided by governmental dependence**

<b>University</b>	<b>Human capital</b>	<b>Structural capital</b>	<b>Relational capital</b>	<b>Total</b>
Handels i Stockholm	1	5	10	16
Kungliga tekniska högskolan	54	38	252	344
Uppsala universitet	55	15	96	296
Umeå universitet	74	46	218	338
Stockholms universitet	31	15	96	142
Blekinge tekniska högskola	63	45	276	384
Högskolan i Halmstad	65	35	157	257
Högskolan i Gävle	59	51	180	290

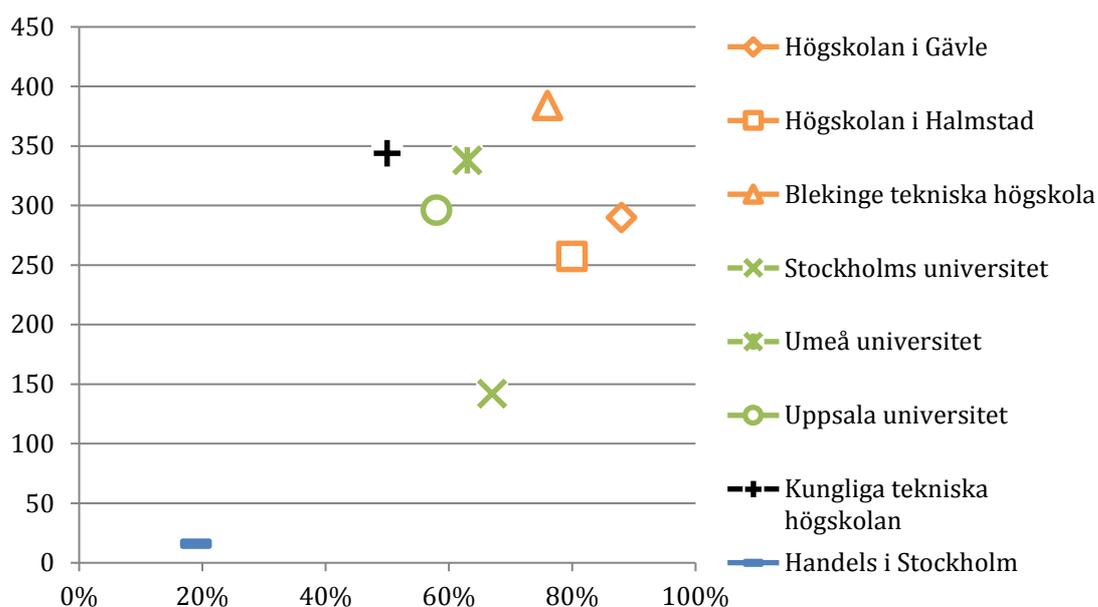
Table 4.14 present the most frequent items for each university divided by governmental dependence. As before, it can be seen that there is no large difference between the university and the groups because they all share similar items. However, Handels i Stockholm show different types of items as their most frequent. Instead of gender proportion and collaboration agreements as the most frequent, they present information about the stakeholder’s opinion of the university (reputation) and also about quality certificates awarded. This may be because they want to market themselves and show their excellence toward the society to a larger extent than more dependent universities (Gordon et al, 2002). As stated before is this in line with signaling theory because they want to signal to their funders about their quality and reputation (Dumay & Cai, 2015).

Table 4. 14. Most frequent items divided by governmental dependence

University	The most frequent items
Handels i Stockholm	R11, S5, R10, S6 and H2
Kungliga tekniska högskolan	R4, R10, R15, S3 and R12
Uppsala universitet	R4, R10, R16, R15, R12 and R14
Umeå universitet	R4, H1, R12, R10 and S3
Stockholms universitet	R10, R4, R12, R14 and H7
Blekinge tekniska högskola	R4, R10, R3, R12, S3 and R14
Högskolan i Halmstad	R4, R10, H1, R14, R12 and R3
Högskolan i Gävle	S3, R4, R10, R15 and R16

Figure 4.3 visualizes the total amount of IC reporting of the different universities where the different colors represent the different groups of governmental dependence. The universities that are colored yellow are the universities that are the most governmental dependent and in the figure can it be seen that these report on IC to the similar extent as the universities that are less governmental dependent. This means that also less governmental universities need to attract funders and therefore also report on IC (Gordon et al, 2002).

Diagram 4. 3. Governmental dependence and total IC items



Clarification: Governmental dependence as grants divided by total revenues on the x-axis and number of IC items on the y-axis.

## 5. Conclusion

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*This chapter contains the conclusions of this thesis, followed with its limitations. The different contributions are also discussed and at last some suggestions for future research is presented.*

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### 5.1. Conclusions

This thesis aimed to explain and explore how different Swedish universities report on intellectual capital (IC) information in their annual reports regarding the different characteristics of size, maturity, type of institution and governmental dependence. The conclusion connected to the explanatory part of this thesis is that all universities analyzed are reporting on IC information. It is also shown that the most frequent capital type is relational capital, followed by human capital and later structural capital. This can be explained by the fact that universities are dependent of the knowledge of staff and students, which refers to relational and human capital. Relational and human capital can be seen as tacit knowledge, which can be transformed to implicit knowledge, such as structural capital. Structural capital can therefore be used to represent the knowledge in different forms. Besides from coding the information after human, structural and relational capital it was also coded by some quality measures. The results was that the majority of the information was presented qualitatively which can be explained by the possibilities to tell a story and create visualizations for the reader rather than just report on specific items. Furthermore, the majority of the IC information was presented in a non-financial way and historically, the latter can be explained by the fact that universities report IC information in order to be accountable for past behavior. The fourth result regarding quality measures was that the majority of the IC information was presented in a specific way, which may be connected to the fact that the universities want to report as specific information as possible to their stakeholders. Essentially, the conclusion regarding the explanatory part of this thesis is that the different types of IC information

are both scattered all over the annual report as well as integrated together and presented in different forms.

The conclusions regarding the explorative part of the thesis is that there are quite large differences between the eight universities examined, both seen in the number of items and their qualitative form. The universities considered as standing out are Handels i Stockholm because of the low level of IC items as well as Högskolan i Gävle and Högskolan i Halmstad because of their high level of reported information regarding innovation. However, no clear pattern was found regarding the results of the content analysis and the four different characteristics. Since this thesis did not aim to make generalizations, but rather to explore different reasons this results does not mean that there is no relationship between IC and the characteristics examined.

## **5.1. Theoretical contribution**

The theoretical contribution of this study is the theoretical model that include both external and internal pressures that affect IC reporting. The model is used to both explore and explain how Swedish universities report on IC information. We used the model in order to give explanations of how universities report on IC information and also to discuss possible reasons to how different universities characteristics can affect IC reporting.

### **5.1.2. Empirical contribution**

The empirical contribution with this study is our results regarding how eight Swedish universities report on IC information in terms of type of IC information, its quality measures, its location and images reported. The results show that IC information is reported in a wide range of different forms, often integrated with each other as well as scattered all over the annual reports. This results in difficulty in capturing IC information and the results are depending on what kind of checklist that have been used. One of the

motives of this thesis was to gain a deeper understanding about how different universities report on IC information, in order to assist in the development of a common framework to measure and assess IC information in universities. Instead of contributing regarding different characteristics, this thesis empirical results contributes to a deeper understanding of how the IC information is integrated in universities strategies as well as historical performance in different aspects of the university. This thesis uses an inductive method where the findings can be brought back in to our theoretical model in the sense that both internal and external pressures affect universities to report on IC information as an integrated part of both strategies and historical performance.

## **5.2. Limitations**

The main limitation with this study is that it only examined eight universities, which makes it difficult to generalize the results. But since the purpose of this study was to explain and explore how different universities report on IC information, a qualitative method was applied instead in order to see how universities reported more in depth. For future research it would be interesting to include more cases in order to for the results to be generalized.

Another limitation is that there can be aspects other than we have examined that can be used when discussing possible reasons of how universities with different characteristics is reporting on IC information. Another limitation is the coding rules that developed under the coding process. For example, when projects were presented in the annual reports, one project was only coded once even if the same information was mentioned several times. This way, one item could get a low frequency even though it was mentioned several times.

### **5.3. Future research**

As mentioned above a limitation with this study is the number of universities and therefore future research could include all Swedish universities. By including more universities the possibility to use a quantitative research method increases in order to see significant relations and make generalizations about how universities with different characteristics report on IC information. Future research could also include in depth case studies in terms of interviews in order to investigate why Swedish universities are reporting on IC and what motives are behind it. In that way it would be possible to further examine the explanations of IC reporting of universities in Sweden.

Since our study only include four university characteristics future research could also include more characteristics to further see if any additional characteristic could affect IC reporting in universities. Besides from annual reports universities also use other communication channels, for example web pages. It would therefore be interesting to further explore and explain how universities report on IC information in other communication channels.

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## Annex 1 Scoring checklist

### Scoring checklist IC reporting

	IC elements	Indicators
	<b>Human Capital</b>	
H1	Academic and professional qualifications of staff	Information about number of doctors and professors
H2		Information about qualifications among teaching and research staff
H3		Information about number of technical, administrative and library staff
H4		Information about increasing teaching and research staff
H5		Information about decreasing teaching and research staff
H6		Information about duration of teaching and research staff
H7	Scientific productivity	Information about produced doctoral thesis and examinations
H8		Information about publications
H9	Teaching capacities and competences	Information about continuing education and training among staff
H10		Information about evaluation of continuing training among staff
H11		Information about the wellbeing and sick-absence of staff
H12		Information about teachers and researchers from other Swedish universities
H13		Information about teachers and researchers from foreign universities
	<b>Structural capital</b>	
S1	Teaching management and organization	Information about lecture size
S2		Information about teaching resources in relation to number of students
S3	Effort in innovation	Information about R&D investments and projects under development
S4		Information about staff and organization innovation ability
S5	Management quality	Information about quality certificates rewarded
S6		Information about investments in library

		and electronic media
S7		Information about conferences visited and hosted
S8	Intellectual property	Information about patents granted
	<b>Relational capital</b>	
R1	Efficiency of graduate teaching	Information about drop-out rate among students
R2		Information about graduation rate among bachelor and master students
R3		Information about performance rate of the year (examined students/registered year-students)
R4		Information about gender proportion among students and teachers
R5	Student satisfaction	Information about student satisfaction and health
R6		Information about first applicants
R7	Graduate employability	Information about graduated students employment
R8		Information about time until graduated students first employment
R9	Relations with society	Information about students work experience gained within the education
R10		Information about collaboration agreements on projects and activities with companies and organizations
R11	University's image	Information about stakeholders opinion of the university (reputation)
R12		Information about communication with stakeholders
R13		Information about doctorate programs with official quality certifications
R14		Information about foreign exchange students
R15	Collaboration with other universities	Information about collaboration with Swedish universities

R16		Information about collaboration with foreign universities (organizational level)

**Source: Bezhani (2010) & Ramirez et al. (2017)**

## Annex 2. Illustration of sample selection of universities

Size - as number of students

<b>Stockholms universitet</b>	<b>27656</b>
Lunds universitet	26767
Göteborgs universitet	25021
<b>Uppsala universitet</b>	<b>23734</b>
Linköpings universitet	17447
<b>Umeå universitet</b>	<b>16308</b>
Linnéuniversitetet	13442
<b>Kungliga tekniska högskolan</b>	<b>12349</b>
Malmö Högskola	11682
Örebro Högskola	9177
Chalmers tekniska högskola	8952
Karlstads universitet	8309
Luleå tekniska universitet	7628
Mälardalens högskola	7340
Högskolan i Jönköping	7183
Mittuniversitetet	6968
Södertörns högskola	6672
<b>Högskolan i Gävle</b>	<b>6174</b>
Karolinska Institutet	5973
Högskolan i Dalarna	5907
Högskolan i Borås	5559
Högskolan i Kristianstad	5247
<b>Högskolan i Halmstad</b>	<b>5013</b>
Högskolan i Väst	4617
Sveriges Lantbrukaruniversitet	3745
Högskolan i Skövde	3656
<b>Blekinge Tekniska Högskola</b>	<b>2859</b>
<b>Handels i Stockholm</b>	<b>1696</b>
Ersta Skönadal Bäcke Högskola	928
Gymnastik och idrottshögskolan	753
Kungliga musikkolan	675
Konstfack	644
Stockholms konsthögskola	444
Kungliga konsthögskolan	264
Försvärshögskolan	191

Source: Groups are divided by 6914 students ( $27565/4 = 6914$ )

### Maturity - as number of years since establishment

<b>Uppsala universitet</b>	<b>540</b>
Lunds universitet	351
<b>Kungliga tekniska Högskolan</b>	<b>320</b>
Kungliga musikhögskolan	246
Försvarshögskolan	225
Karolniska institutet	207
Gymnastik och idrottshögskolan	204
Konstfack	203
Mitt universitetet	175
<b>Stockholms universitetet</b>	<b>139</b>
Göteborgs universitetet	126
<b>Handels i Stockholm</b>	<b>108</b>
Malmö Högskola	69
Chalmers Tekniska Högskola	68
<b>Umeå universitet</b>	<b>61</b>
Linköpings universitet	50
Luleå tekniska universitetet	46
<b>Högskolan i Halmstad</b>	<b>44</b>
Örebro universitetet	40
Högskolan i Jönköping	40
Karlstads universitet	40
Mälardalens Högskola	40
Linnéuniversitetet	40
Högskolan i Dalarna	40
Högskolan i Borås	40
<b>Högskolan i Gävle</b>	<b>40</b>
Högskolan i Kristianstad	40
Högskolan i Skövde	40
Sveriges lantbrukaruniversitet	40
Kungliga konsthögskolan	39
<b>Blekinge Tekniska Högskola</b>	<b>28</b>
Högskolan i Väst	27
Södertörns Högskola	21
Ersta Skönadal Bäcke Högskola	19
Stockholms konsthögskola	3

Source: Groups are divided by 135 years ( $540/4 = 135$ )

**Type of institution - university or university collage**

<i>Universities</i>	<i>University collages</i>
<b>Stockholms universitet</b>	Högskolan i Jönköping
Lunds universitet	Malmö Högskola
Göteborgs universitet	Mälardalens Högskola
<b>Uppsala universitet</b>	Högskolan i Dalarna
Linköpings universitet	Högskolan i Borås
<b>Umeå universitet</b>	<b>Högskolan i Gävle</b>
Örebro universitet	Södertörns Högskola
Karlstad universitet	<b>Högskolan i Halmstad</b>
Linnéuniversitetet	Högskolan i Kristianstad
Mitt universitetet	Högskolan i Väst
Luleå tekniska universitet	Högskolan i Skövde
Karolinska institutet	<b>Blekinge Tekniska Högskola</b>
Sveriges lantbrukaruniversitetet	Ersta Sköndal Bäcke Högskola
<b>Kungliga tekniska Högskolan</b>	Kungliga musikhögskolan
<b>Handels i Stockholm</b>	Konstfack
Chalmers Tekniska Högskola	Gymnastik och idrottshögskolan
	Kungliga konsthögskolan
	Stockholms konsthögskola
	Försvarshögskolan
Source: Groups are divided by having university status or not	

**Governmental independence - as grants received from the government as percentage of total income**

<b>Handels i Stockholm</b>	<b>19%</b>
Karolinska institutet	43%
Chalmers tekniska Högskola	47%
Försvarshögskolan	48%
<b>Kungliga tekniska högskolan</b>	<b>50%</b>
Sveriges lantbruksuniversitetet	51%
Lunds universitet	52%
<b>Uppsala universitet</b>	<b>58%</b>
Ersta Sköndal Bäckes Högskola	59%
Södertörns Högskola	60%
Luleå Tekniska Högskola	62%
<b>Umeå universitet</b>	<b>63%</b>
Göteborgs universitet	65%
Linköpings universitet	65%
Högskolan i Jönköping	66%
<b>Stockholms universitet</b>	<b>67%</b>
Mälardalens Högskola	74%
Linnéuniversitetet	76%
Malmö Högskola	76%
<b>Blekinge Tekniska Högskola</b>	<b>76%</b>
Karlstad universitet	78%
Högskolan i Dalarna	78%
Högskolan i Skövde	79%
Högskolan i Borås	80%
<b>Högskolan i Halmstad</b>	<b>80%</b>
Gymnastik och idrottshögskolan	81%
Örebro universitetet	82%
Mitt universitetet	82%
Högskolan i Väst	83%
Högskolan i Kristianstad	84%
<b>Högskolan i Gävle</b>	<b>88%</b>
Kungliga konsthögskolan	91%
Konstfack	92%
Stockholms konsthögskola	94%
Kungliga konsthögskolan	97%

Source: Groups are divided by 25 percentiles ( $100/4 = 25$ )