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HUMAN CAPITAL OF THE SUPPLIER IN HOTEL INFORMATION SYSTEM PROJECTS

Master's thesis
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October 2020

ABSTRACT

Laura Malmivuori: Human Capital of the Supplier in Hotel Information System Projects
Master's thesis
Tampere University
Master's Degree Program in Information and Knowledge Management
October 2020

The strategic decisions in companies also require looking at the human capital of the organization. In this research, the starting point was a desire to enter a new market with a new hotel information system product. This decision requires identifying if the human capital in the organization enables the success on that market and that way to decide whether the decision is the right one. The human capital has a huge role in organizations, especially in Information Technology since it is the key competitive differentiator now and in the future. This is why the human capital should be identified and the future direction should be determined in the organizations.

The aim of this research is to create a view of supplier's human capital that is required in hotel information system projects and to identify the gap between the required and the case company's current human capital. The human capital in this research is defined on team and individual levels, so that each component can be applied to individuals, but the entity combines the components required from the team. The research was carried out as a case study in an Information Technology (IT) -consulting company, vendor and Finnish hotels. The data was collected by interviewing four hotel organizations, one vendor and the case company's employees. Also, the company's internal data sources such as project process instructions were used as secondary data. Data was analyzed trough thematic analysis process, which helped to identify different factors that are required from the supplier in hotel information system projects. The case company's employees then identified their level on each component of the list.

The outcome of the research is the human capital list, which gathers together all of the main themes and their components that were identified in the empirical research. The list also identifies differences in two project phases: sales and delivery, so that the organization is able to provide the required human capital at the right time. The research managed to identify aspects that were not covered in the literature and study the human capital in the context of hotel industry and its information systems. The research also defined a new way of measurement of human capital and clarified the gap of the required and current human capital in the case company. These results provide a guidance for future studies and other organizations in similar situation. The research also provides information of the hotel industry and the information systems in hotels and points out aspects that lack research especially regarding supplier's human capital and wider or narrower perspectives to it.

Keywords: human capital, competence, hotel industry, information system, project, human capital measurement, competence management

TIIVISTELMÄ

Laura Malmivuori: Toimittajan inhimillinen pääoma hotellialan tietojärjestelmäprojekteissa
Diplomityö
Tampereen yliopisto
Tietojohtamisen diplomi-insinöörin tutkinto-ohjelma
Lokakuu 2020

Yritysten strategiset päätökset edellyttävät organisaation inhimillisen pääoman tarkastelua. Tässä tutkimuksessa lähtökohtana on halu laajentaa uusille markkinoille uuden tietojärjestelmätuotteen kanssa. Tämä päätös edellyttää organisaation inhimillisen pääoman tunnistamista ja ymmärrystä siitä, onko organisaation inhimillinen pääoma sellaista, jotta se mahdollistaisi menestymisen kyseisillä markkinoilla, ja siten päättää, onko päätös oikea. Inhimillisellä pääomalla on valtava rooli organisaatioissa, etenkin tietotekniikan alalla, koska se on yksi tärkeimmistä asioista, joka luo kilpailukykyä nyt ja tulevaisuudessa. Siksi inhimillinen pääoma tulisi tunnistaa ja sen tulevaisuuden suunta määrittää.

Tämän tutkimuksen tavoitteena on luoda näkemys toimittajan inhimillisestä pääomasta, jota tarvitaan hotellien tietojärjestelmäprojekteissa, ja tunnistaa kuilu vaaditun ja tapausorganisaation nykyisen inhimillisen pääoman välillä. Tämän tutkimuksen inhimillinen pääoma on määritelty tiimi- ja yksilötasolle, jotta kutakin komponenttia voidaan soveltaa yksilöihin, mutta kokonaisuus yhdistää tiimiltä vaadittavat komponentit. Tutkimus tehtiin tapaustutkimuksena tietojärjestelmäkonsultointiyrityksessä, tietojärjestelmätoimittajalla ja suomalaisissa hotelleissa. Tiedot kerättiin haastattelemalla neljää hotelliorganisaatiota, yhtä järjestelmätoimittajaa ja tapausorganisaation työntekijöitä. Lisäksi yrityksen sisäisiä tietolähteitä, kuten projektiprosessiohjeita, käytettiin sekundääriaineistona. Aineisto analysoitiin temaattisella analyysilla, jonka avulla tunnistettiin erilaisia tekijöitä, joita toimittajalta vaaditaan hotellien tietojärjestelmäprojekteissa. Tapausyrityksen työntekijät arvioivat sitten oman tasonsa jokaisen inhimillisen pääoman komponentin osalta.

Tutkimuksen tuloksena tuotettiin lista, joka kokoaa yhteen kaikki empiirisessä tutkimuksessa tunnistetut inhimillisen pääoman pääteemat ja niiden komponentit. Lista tunnistaa myös erot kahdessa projektin vaiheessa: myynnissä ja toimituksessa siten, että organisaatio pystyy tarjoamaan tarvittavan inhimillisen pääoman oikeaan aikaan. Tutkimuksessa pystyttiin tunnistamaan myös kirjallisuudessa käsittelemättömiä näkökulmia ja tutkimaan inhimillistä pääomaa hotellialan ja sen tietojärjestelmien yhteydessä. Tutkimuksessa määriteltiin uusi tapa mitata inhimillistä pääomaa sekä tunnistettiin vaaditun ja nykyisen inhimillisen pääoman kuilu tapausyrityksessä. Se antaa suunnan inhimillisen pääoman mittaamiselle tulevissa tutkimuksissa ja ohjeistaa muita vastaavassa tilanteessa olevia organisaatioita. Tutkimus tarjoaa myös lisätietoja hotellialasta ja hotellien tietojärjestelmistä sekä tuo esiin alueita, joista puuttuu tutkimusta, kuten erityisesti toimittajan inhimillinen pääoma ja sen laajemmat ja kapeammat näkökulmat.

Avainsanat: inhimillinen pääoma, osaaminen, hotelliala, tietojärjestelmä, projekti, inhimillisen pääoman mittaaminen, osaamisen johtaminen

PREFACE

When I started at Tampere University of Technology in 2015, I could not imagine what kind of five years I would have in front of me. As a freshman, the thesis sounded like something really big and even a little scary, and at that time I could not even dream about the day it would be ready. However, these five years have prepared me well for it, both in terms of studies and other experiences. Now, my master's thesis is finally ready, and thanks for it does not belong solely to its author.

I would like to thank Solteq Plc, who made the thesis possible, for an interesting topic and my supervisors Miia Toivanen, Miikka Palvalin and Nina Helander for their comments and support in doing the work. The interviewees also deserve praise, because without you this thesis would not have been written. In addition, thanks to Pyry, for the huge support and patience in correcting my English grammar mistakes throughout the project, as well as the proofreaders Iida, Venla and Katri. I want to thank my year course for the fun-filled years, especially kuukausipalaveri -meetings, as well as the Guild of Information and Knowledge Management Man@ger for the amazing community, to which I have had the honor of belonging during my years of studying. Lastly, I would also like to thank my parents for their support and encouragement throughout my school journey, which is now coming to an end, at least for the time being.

Tampere, 8 October 2020

Laura Malmivuori

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ABBREVIATIONS

Case Company	Solteq
CRP	Conference Room Pilot
CRS	Central Reservation System
ERP	Enterprise Resource Planning
GDS	Global Distribution System
IT	Information Technology
HC	Human capital
ITIL	Information Technology Infrastructure Library
OTA	Online Travel Agent
PMS	Property Management System
POS	Point of Sale
RFI	Request for Information
RFP	Request for Proposal

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1. INTRODUCTION

1.1 Background and motivation for the study

Digitalization changes organizations and their operations, markets and increases the competition (Ilmarinen & Koskela 2015). Companies across industries need the ability to pivot rapidly to pursue new business opportunities and keep up with a fast-changing global business environment (Parida 2018), which has sped as the effect of digitalization. One important mechanism for firms to grow is the expansion of the scope of the products they offer or the markets in which they act (Penrose 2009). Product diversification as a corporate strategy has been recognized as a means for increased market power (Hitt et al. 1994), capitalizing on economies of scale (Teece 1982, cited in Miller), using excess resources (Penrose 2009), and reducing transaction costs (Amit & Livnat 1988). It is a way to improve the business. The opportunities for new products arise from changes in the productive services and knowledge in the firm (Penrose 2009). According to Chang (1996) the decision to entry specific markets are based on the knowledge base and industry attractiveness. Often firms tend to enter business, where they can apply its existing knowledge base. The existing resources, such as skills, knowledge and physical resources, have an important role in choosing the direction of the diversification (Penrose 2009). One way to diversify the product scope is to look for new industries. In this research we will focus on an information system product, which is expanded to a new industry, hotels.

As a context, the hotel industry is unique and separates from other industries for example by inseparability, perishability and non-quest buyers (Langvinienė & Daunoravičiūtė 2015; Stringam & Partlow 2016). In addition, each hotel is different by offering, location, ownership, target group and image (Rautiainen & Siiskonen 2015). This fact makes the hotel industry difficult to understand and operate. Since the operating environment is complex, hotels have multiple wide and complex information systems to cover all the functionalities and departments. The systems give answers to many questions and challenges in hotels, such as competitive advantage (Ham et al. 2005; Bilgihan et al. 2011; Pereira-Moliner et al. 2016), better customer experience and process efficiency (DiPietro

& Wang 2010; Stringam & Partlow 2016), which is why information systems and information system projects are crucial for hotels. In this sense the hotel industry is attractive market to enter.

The diversification as a corporate strategy is linked to the human capital that exists in the organization. Many managers claim that human capital is *the most important asset* in the organization (Fulmer & Ployhart 2014) or at least one of the most important ones (Boudreau & Ramstad 2008). The CEO of Solteq has said that: "*We are people's business, and our talent pool is the company's greatest asset."* (Olli Väätäinen 2020) Especially, in service industries like consulting and Information Technology (IT) services, knowledge is a key competitive differentiator (Gratton & Goshal 2003). Human capital might enable the business, but it also has to be emphasized that any human capital is not beneficial for the organization.

Human capital is strongly related to the organization's strategy (Lönnqvist et al. 2005; Viitala 2005; Hyppänen 2013), which links it to strategic decisions like diversification decisions. The comprehensive competence management is possible through the identification of the current situation and choosing the future direction. Organization has specific strategic human capital, which can be defined by the optimal market opportunities or the current resources in the organization. (Viitala 2005) It is important to consider, if the current competence is enough in the future (Hyppänen 2013). In this case, the case company wants to find out if the current human capital is enough to successfully implement hotel information system projects, which is the strategic starting point in this research. The particular human capital creates competitive advantage and organizational performance for the case company (Hyppänen 2013; Vargas 2016). Also, the individuals benefit from the human capital, which defines a great deal of their career development, salary, motivation and well-being (Hyppänen 2013).

1.2 Purpose of the study, research questions and research gap

The aim of the study is to identify the supplier's required human capital in the information system projects' sales and delivery phases in hotel industry. It also identifies the gaps in the required human capital and the current human capital of the case company. To reach this aim, the study will cover the theory of human capital, competence and their management as well as the hotel industry and information systems in the hotel. In addition, theory of the information system project lifecycle is studied. The study includes a theoretical part and a qualitative case study to reach its goal.

In the theoretical part of the study the human capital and its management are studied. The studied human capital is limited to supplier organization's human capital which means that the human capital of the customer or other stakeholders are not taken into account. In this context the human capital of the project team and the individuals is more important than the human capital of the organization in general. In addition, the hotel information systems are covered in this theoretical part. It is important to emphasize that the studied information system is limited to the hotel industry and to one specific system there, the Property Management System (PMS), which is in the heart of the hotel operations. Since the definition of PMS varies, it is seen as a broad solution in this research. The PMS is defined in more detail in Subchapter 3.5.

The focus of the case study is Solteq (the case company) and its stakeholders that act within hotel industry. Solteq is a Nordic IT Service provider and software house that specializes in digital business solutions and vertical software markets. The case study is focused on the Solteq's Microsoft Dynamics 365 Business Central team, which delivers Enterprise Resource Planning (ERP) and Point of Sale (POS) solutions mainly for retail industry. A software vendor and possible future customers in the hotel industry are interviewed in order to gain understanding about the hotel industry and the human capital required in the projects. The aim is to create better understanding of the required and missing human capital for the case company. The interviews are also conducted with the case company's employees to understand the required human capital in their perspective and also gain understanding about the current human capital in the team.

For the case company, the study of the required human capital is important. Organization does not have solutions for hotel industry yet and this study is part of a research to identify the required human capital to conduct successful projects in the hotel industry. The organization does not have any previous research about the human capital or competences needed in the hotel industry projects and any of this information is neither available straight from the current research, where the research gap has been identified. This is why the results of this study are important in making the decision whether the case company should enter the hotel information system market and what is required if they do. The objective of this study for the organization is to learn more about the hotel industry and the human capital required in the hotel industry projects.

The main research question is:

1. What human capital does the hotel industry information system sales and delivery require from the supplier's team (and its individuals)?

Sub research questions:

1.1. How can the current state of human capital be measured?

1.2. What is the gap between required and current human capital in the case organization?

The first sub research question is answered mostly through theoretical study and the main research question and the second sub research question is answered through the empirical study. It is also important to underline that the study has a supposition that the supplying organization requires human capital in system sales and delivery. This is based on the fact that in knowledge intensive organizations, the resources are mostly shaped by intangible assets (Lönnqvist et al. 2005).

Though, the research has very practical starting point, it also has value from the scientific perspective. Each of the research areas covered in the literature research, human capital, competence and their management, hotel industry, hotel information systems and project lifecycle, have at least decent amount of research, but when it comes to these areas combined, there are only few or even not at all conducted research. Human capital and competence are studied from different perspectives quite a lot (e.g. Nordhaug & Gronhaug 1994; Edvinsson & Malone 1997; Sydänmaanlakka 2000; Lönnqvist et al. 2005; Viitala 2005; Ployhart & Moliterno 2011). The management and measurement of competence has also quite good amount of research (e.g. Viitala 2005; Hyppänen 2013). Instead human capital management is often seen as a part of intellectual capital management (e.g. Lönnqvist et al. 2005; Kujansivu 2008) and it alone has been studied mostly only from the human resource management perspective, which is quite strategic and does not suit for the purpose in this research (e.g. Baron & Armstrong 2007; Ingham 2007). This means that there are no well-established methods to measure the human capital in this operational level in the literature.

When we also consider the hotel industry and information system literature, these have also a good amount of research (e.g. Pucciani & Murphy 2011; Rautiainen & Siiskonen 2015; Stringam & Partlow 2016) as well as the information system project lifecycle (e.g. Sommerville 2006; Wybo 2007). But when it comes to human capital in the information system projects or specifically supplier's human capital in information system projects, the literature is quite scarce. There is some research about the supplier's human capital in information system projects (e.g. Pratt 2007; Huang et al. 2009; Banai & Tulimieri 2013), but it is kept on quite general level. Also, when we combine all of these areas together, supplier's human capital in hotel information system projects and its phases,

the literature does not give much answers to this question, which gives a good opportunity for this research to cover this research gap. The Figure 1 presents the research gap.

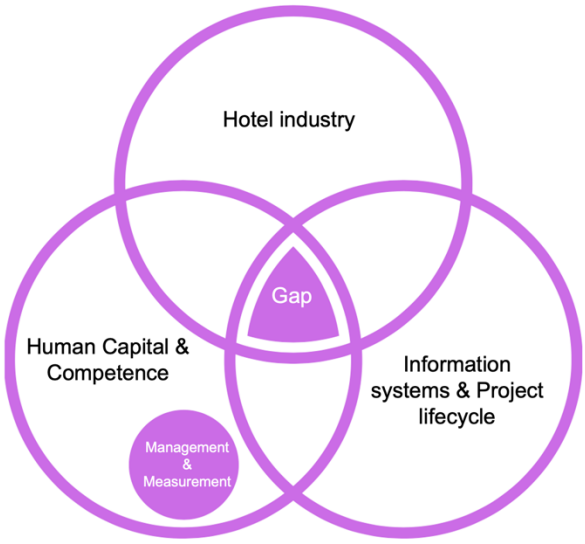

Figure 1: The research gap

The research focuses only on the human capital, not the other parts of the intellectual capital. Competence is considered to be a part of human capital. The human capital in this case is studied as a broad definition, but the research will not focus on the basic competences required in the information system projects, e.g. the technical knowledge. It rather focuses on the hotel industry specific human capital. Since the line between these two areas is not clear, it can only be said that the research is focused more on the hotel industry specific human capital but that it does not exclude any specific human capital. This leads to another presumption, which is that the supplier has a required level of technical competence and understanding of information system projects in overall. One limitation is also that the human capital is studied on project team level, which means that the required human capital applies to the team as a whole.

The literature on hotel industry and information systems has emphasized research that is less than ten years old, as this area has changed as the effect of digitalization. The limitation ensures the applicability of the studies to the target company. However, older publications are also included if their age has not been considered to have significant effect on the research.

1.3 Research approach

Research philosophy refers to the beliefs and assumptions, which shape the understanding of the research questions, the methods and interpreting the findings (Crotty 1998).

The philosophical assumptions, strategic and methodological choices used in this research are presented in Figure 2.

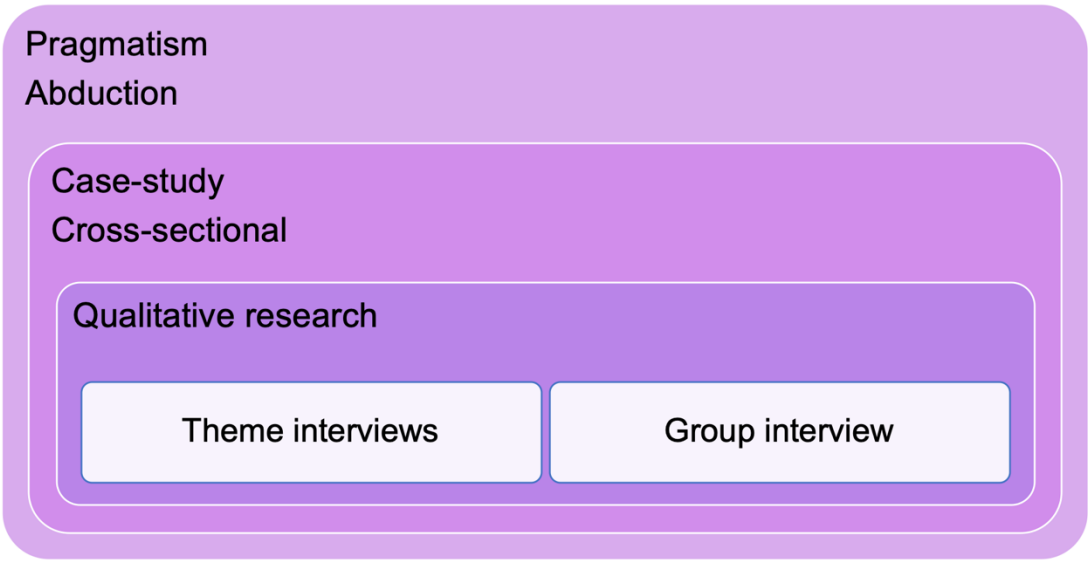

Figure 2: The assumptions and strategy of the research

The starting point for this research is very practical since the organization has a real need to understand the research subject. Thus, pragmatism can be seen as the most relevant philosophy in this research. Pragmatism reconciles both objectivism and subjectivism, facts and values, accurate and rigorous knowledge and different contextualized experiences. It is value-driven research and the researcher's values drive the process. The practical outcomes are relevant for the study. Pragmatism recognizes many different ways to undertake the research and the emphasis is on practical solutions and outcomes. (Saunders et al. 2016) The method or methods should enable appropriate data for the research (Kelemen & Rumens 2008).

The approach to theory development in this research has inductive and deductive features, so the approach can be seen as abduction. According to Saunders et al. (2016) and Eriksson and Kovalainen (2008) in inductive approach new theory is created as an outcome from empirical research. In inductive approach the data collection is used to explore a phenomenon, identify themes and create a conceptual framework. The research is often qualitative and uses a variety of methods in order to establish different views of phenomena. (Saunders et al. 2016) The deductive approach instead starts with theory and a hypothesis drawn from the literature. Then the research proceeds from hypothesis to empirical research. (Eriksson & Kovalainen 2008; Saunders et al. 2016) Data collection is used to evaluate the hypotheses related to an existing theory. One

characteristic of deduction is a carefully selected and sufficient size of sample to generalize the theory. (Saunders et al. 2016) The abductive approach is a combination of these two approaches and Eriksson and Kovalainen (2008) have described it as moving between the two methods. Like the inductive approach, the abductive approach is also empirically based, but in addition to empirical research, it uses previous literature as inspiration. (Anttila 1996) In this research, the research starts with existing theory, which creates a base for the empirical research. It is a starting point for the interviews. After this the qualitative data is collected and it gives more understanding about the situation and research subjects, where the framework for the human capital is created.

The research strategy is a plan of how the researcher will answer the research question (Saunders et al. 2016). In this research, a case-study is being used. Case study is an in-depth inquiry into a topic within its real-life setting (Eriksson & Kovalainen 2008; Yin 2014; Saunders et al. 2016). In this research the focus is on the case company and the human capital it will require.

This research is a cross-sectional by its nature. Cross-sectional research studies a particular phenomenon at a particular time. It is focused on a specific time and is a “snapshot” of the situation. (Saunders et al. 2016) This research has quite a short time horizon, so it can be considered as a cross-sectional study.

This research utilizes semi-structured interviews and a group interview to gather the data. Semi-structured interviews are suitable for situations where the aim is to understand the respondents' attitudes, opinions and the reasons for the choices made. The researcher has a list of themes and key questions, but the use may vary between interviews. (Saunders et al. 2016) In this research, the interviews are conducted via video interviews (Microsoft Teams application) since the Covid-19 prevents personal meetings. Semi-structured interviews are used to gather data, which is often analyzed qualitatively. The interviews allow to collect rich and detailed set of data. (Saunders et al. 2016) The data collection and analysis has been presented in Chapter 5.

1.4 Structure of the research

The research structure consists of five phases. In the first phase an overall understanding of the problem and the current state in case company are studied. The research objective, structure and limitations are defined. In the second phase, a literature research is conducted on relevant areas to create a theory base for the empirical research. The literature research is covered in chapters 2 and 3. Chapter 4 is a summary of the literature research and it concludes the chapters 2 and 3. In the third phase, the empirical

research is conducted in two phases. After the first-round interviews are conducted, analysis has been done and used that as a base for second round interviews. After second round interviews all of the data has been analyzed again. The research methods, data collection and analysis are presented in chapter 5. The fourth phase presents the outcomes of the empirical research in chapter 6. The fifth phase includes discussion and conclusions, and these are presented in chapter 7 and 8. These chapters include the reflections and conclusions of the study, review the theoretical and practical contributions of the research, answer to the research questions, as well as the limitations of the research and possible further research. It also evaluates the research. The theme interview frames (Appendices A & B), data protection and processing (Appendix C), the Excel file that served as the basis for the second phase interviews (Appendix D) and also the final human capital list (Appendix E) are presented in the appendices to the study. The structure of the study is presented in Figure 3.

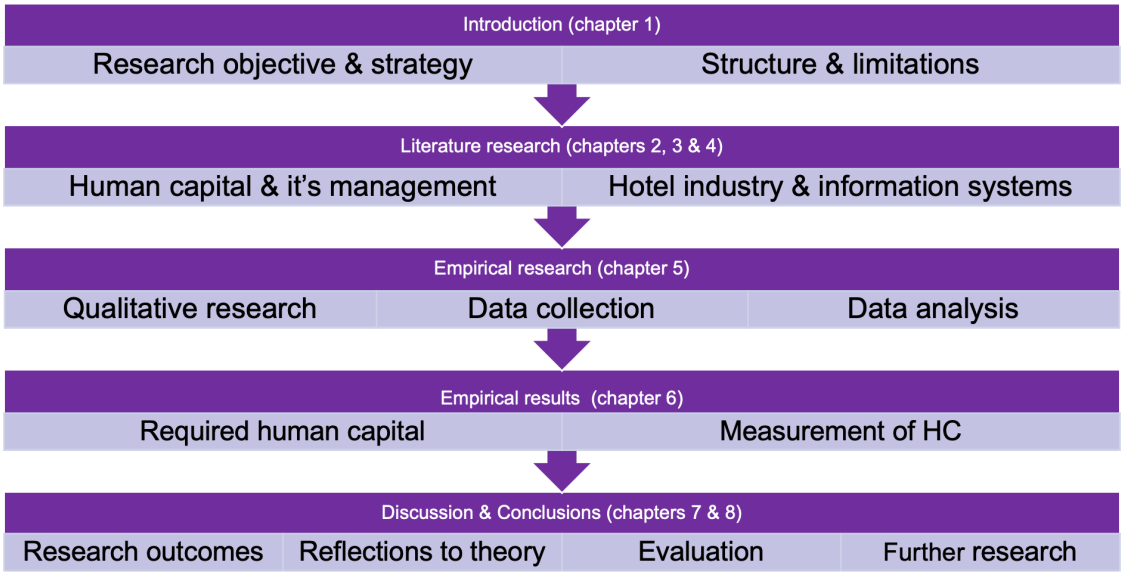

Figure 3: Structure of the research

As a conclusion, it can be said that the research is divided into literature research (chapters 2-4), empirical research (chapters 5-6) and discussion and conclusions of the study (chapters 7 and 8).

2. HUMAN CAPITAL AND HUMAN CAPITAL MANAGEMENT

2.1 Intellectual capital

Intellectual capital has many synonyms and terms that are used in the literature. According to Lönnqvist et al. (2005) intellectual capital is also called for example as intangible assets, knowledge assets and invisible assets. Choong (2008) adds immaterial values to this list. In this research we will use the definition *intellectual capital*.

Intellectual capital was first noted by economist John Kenneth Galbraith in 1969. He was the first, who identified the term in 1960's, but it took about twenty years until it became a central theme in business discussions and scientific articles. (Bontis 2001) The rise of knowledge-intensive services promoted the discussions and importance of intellectual capital, which was also an effective tool for leading and developing an organization (Puusa & Reijonen 2011).

Choong (2008) has studied the multiple terms and definitions of intellectual capital. The first definitions are from 1990's, when Itami and Roehl (1991) indicated that intellectual assets are "*invisible assets that include a wide range of activities such as technology, consumer trust, brand image, corporate culture and management skills*". Later definitions are slightly different and maybe more specific. Youndt et al. (2004) focus on two aspects in defining intellectual capital. The first suggests that intellectual capital is the sum of all knowledge that exists at different levels within and outside the organization. And second suggests that intellectual capital should be utilized for competitive advantage. According to Lönnqvist et al. (2005) and Roos et al. (2006) intellectual capital is not a physical asset, instead it includes for example employees' competences, organization's resources and processes. Lönnqvist et al. (2005) have also defined some characteristics for intellectual capital. These include an abstract nature, difficulties in defining the owner of the asset, impossibility of selling it and ability to use them simultaneously. Also, the business growth opportunities are often unlimited for intellectual capital, which makes it very interesting subject to study. (Lönnqvist et al. 2005)

Intellectual capital cannot be valued separately from other assets, which means that it cannot stand by itself. Intellectual capital needs a network that utilizes intellectual, human capital and organizational resources. (Lev 2001; Rastogi 2003; Mouritsen et al. 2004) According to Saint-Onge et al. (1996, cited in Edvinsson & Malone 1997) the value of

intellectual capital is not created through only one category. Instead every category should be properly led and strong in order to create economical result.

Organization's intellectual capital can be divided into different parts or categories. Many models and frameworks are defined in the literature and only few of them are introduced next. The models help the organizations to understand, what the intellectual capital is. The model created by Edvinsson and Malone (1997) is one of the most well-known according to Puusa and Reijonen (2011). According to the model presented in Figure 4, intellectual capital consists of human capital and structural capital. Human capital consists of employees' and leader's knowledge, skills, experiences and ability to innovate. Structural capital consists of customer capital and organizational capital. The organizational capital is further divided into innovation and process capital. (Edvinsson & Malone 1997)

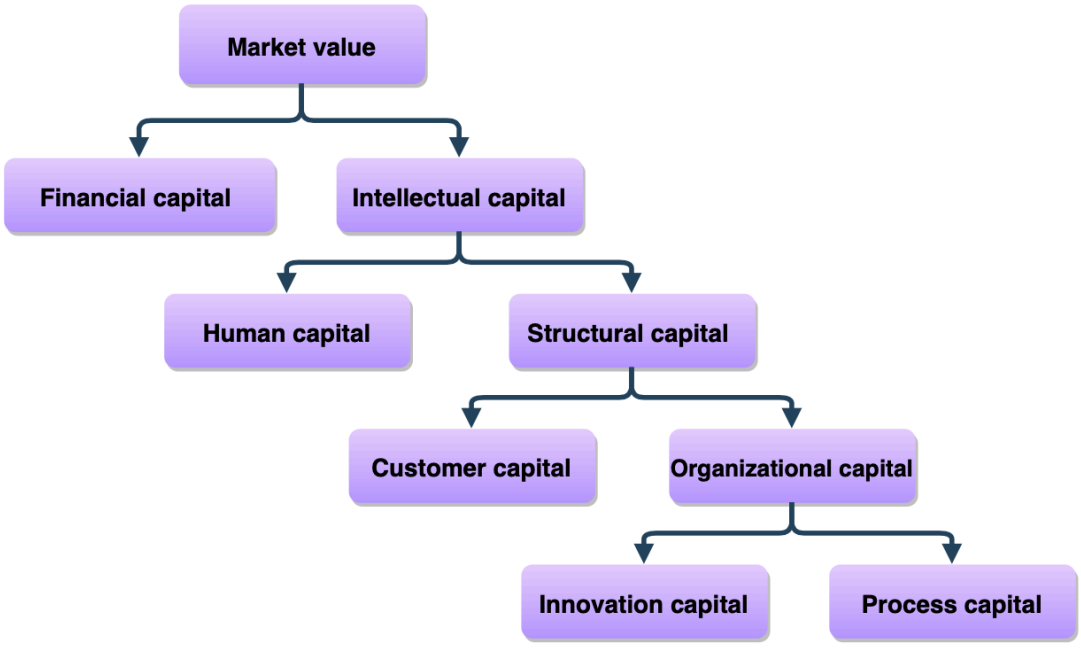

Figure 4: Intellectual capital model (Edvinsson & Malone 1997)

Another model is created by Sveiby (1997) and it is presented in Figure 5. The Sveiby's (1997) model has three components, which are external structure, internal structure and employee competence. The external structure includes relationships to customers and suppliers as well as brands and the organization's reputation and image. The internal structure includes patents, designs, information systems and the culture of the organization. Employee competence instead consists of experience, training and competence. (Sveiby 1997)

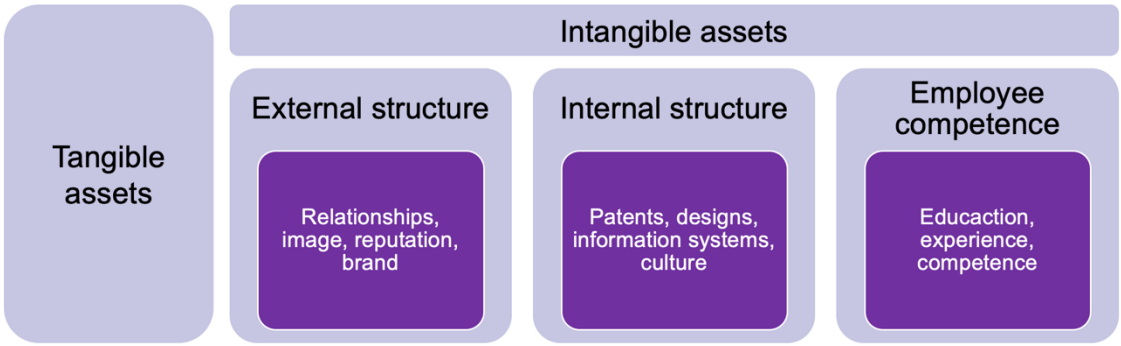

Figure 5: Sveiby's (1997) model of intangible assets

Brooking's (1998) model has four main classes for intellectual capital, which are market assets, human-centered assets, intellectual property assets and infrastructural assets. The market assets, including brands, distribution channels and customer relationships, help the organization to maintain the competitiveness in the market. Human-centered assets include, for example individuals' professionalism, creativity and education. Intellectual property assets consist of copyrights, designs, patents and trade secrets. And finally, infrastructural assets include information systems, technologies and processes, that enable the organization to operate. (Brooking 1997) The Brooking's model is presented in Figure 6.

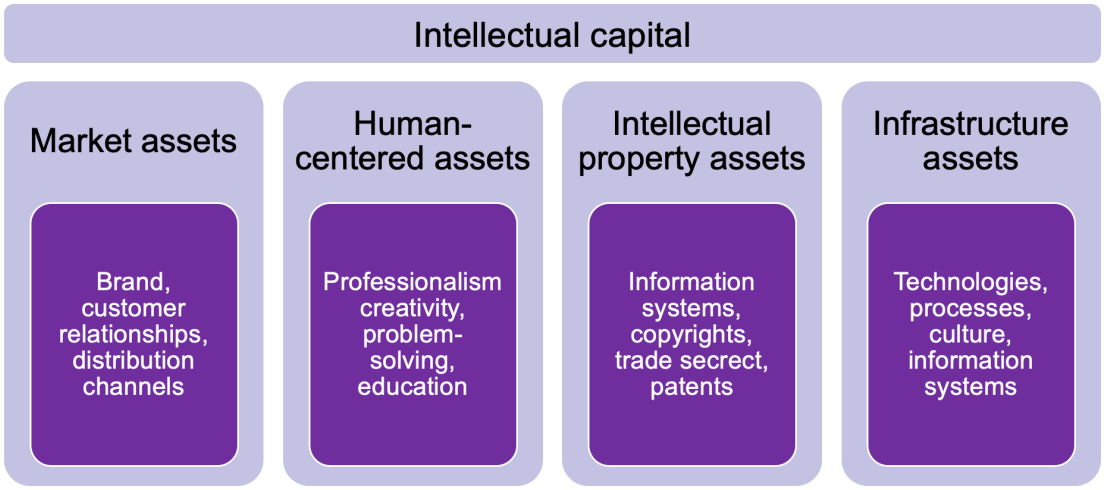

Figure 6: Brooking's (1998) model of intellectual capital

Despite all these previously presented models have differences, they have also similarities. According to Lönnqvist et al. (2005) and Choong (2008) intellectual capital can be divided into three categories: human capital, relational capital and structural capital. These categories are supported by the previously presented models. According to Roos

et al. (2006) and Carson et al. (2004) this division into three categories is fairly well established. This three-category model will be utilized also in this research and is presented in Figure 7.

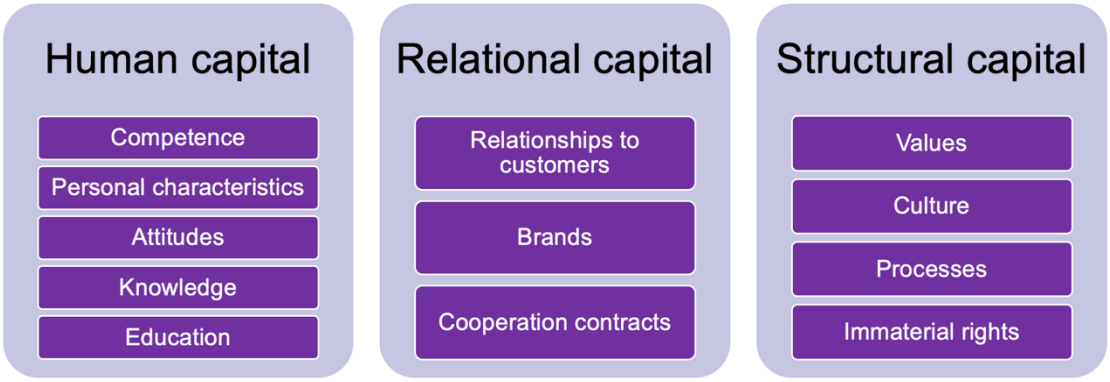

Figure 7: Intellectual capital according to Lönnqvist et al. (2005)

Structural capital includes structures, systems, processes and practices that are used in the operation of the organization (Roos et al. 2006). Structural capital often disseminates the knowledge and experience generated by human capital (Vargas et al. 2016) Structural capital is mostly owned and controlled by the organization (Lönnqvist et al. 2005; Roos et al. 2006). For example, values and culture are often created by the persons in the organization but they rarely change if the person leaves the organization (Lönnqvist et al. 2005).

Relational capital includes organizations partnerships and networks that have an effect on value creation such as customers and media (Carson et al. 2004; Roos et al. 2006). Lönnqvist et al. (2005) includes also reputation, brands and cooperation contracts to relational capital. Organization can only partly control them, but not entirely since some of the relationships are created by specific persons, who can leave the organization (Lönnqvist et al. 2005).

As it can be seen from the models presented, human-related capital is important part of the intellectual capital. The models have separated it into an own subdivision. The third part of intellectual capital, human capital, will be introduced in the next chapter. After that we will look in more detail at the concept of competence, which is highly related to human capital.

2.2 Human capital

According to Carson et al. (2004) there is no systematic attempt to list the attributes that constitute human capital. According to Lönnqvist et al. (2005) it includes employees' competences, education, knowledge, attitudes and personal characteristics. Edvinsson

and Malone (1997) define human capital as capabilities, knowledge, skills, and experience of the employees. The definition also includes values, culture, and philosophy of the organization, which Lönnqvist et al. (2005) include in the structural capital and not as a part of human capital. Roos et al. (2006) define human capital somewhere between these two as knowledge, experience, abilities, innovation, attitudes and personal characteristics. Also, Edvinsson and Malone (1997), Roos (1997) and Bontis (1998) argue that human capital is linked to creativity and innovation of the organization's members. Another definition of human capital is KSAO, which means individuals' knowledge, skills, abilities, or other characteristics (Ployhart & Moliterno 2011). Vargas et al. (2016), instead, define human capital as the combination of tacit and explicit knowledge that belongs to the organization's members and brings value to the organization. Roos et al. (2006) argue that human capital belongs to the members of the organization and members can control and decide how they use their human capital. As a conclusion, it can be said that human capital consists of the intangible resources that employees are offering for the organization.

Intellectual capital is often considered from different perspectives: individual, regional and organizational (Lönnqvist et al. 2005). It is usually studied from the organizational perspective (Lönnqvist et al. 2005), but it can be also approached from broader perspectives, such as regional perspective like municipality perspective (Bounfour & Edvinsson 2005). The intellectual resources of an individual are often the prerequisite for the formation of other intellectual capital. (Lönnqvist et al. 2005) Also, individual intellectual capital is part of organizations intellectual capital and organizations intellectual capital is part of larger area (Bontis 2005). According to Ployhart and Moliterno (2011) the studies of human capital are often focused either on the individual perspective or the organizational perspective. Often the scholars of human resources, psychology and organizational behavior are interested in individual level and macrolevel organizational scholars such as strategists are interested in organizational level. (Ployhart & Moliterno 2011)

Human capital is rare, valuable, inimitable, and non-substitutable intangible resource that allows an organization to raise its value (Barney 1991; Barney & Wright 1998). Hyppänen (2013) finds that competences are also meaningful for the individuals, not only for the organization. Competences and skills define a lot about the career development, salary, motivation and well-being of the employees. In this research, it is important to understand that the individual human capital is a base for the team and organizational human capital and that the research will focus on the individual and team levels. Next we will go through human capital in more depth on the individual and organizational level.

2.2.1 Individual perspective to human capital

As explained earlier, the definition of human capital is not simple, instead it has many different definitions in the literature. Many of them still have several same attributes, such as competences, knowledge, skills, experience, innovation, education and personal characteristics (e.g. Edvinsson & Malone 1997; Roos 1997; Bontis 1998; Lönnqvist et al. 2005; Ployhart & Moliterno 2011; Vargas et al. 2016). According to the presented definitions, the human capital is divided into areas identified in the literature and presented from the individual perspective.

Knowledge is the base of the individual's competence (Lönnqvist et al. 2005). It is actually one of the factors that is most frequently repeated in different definitions of human capital (e.g. Lönnqvist et al. 2005; Roos et al. 2006; Ployhart & Moliterno 2011; Vargas et al. 2016). Roos (1997) has though included it into the definition of competence. Knowledge is a combination of experience, values, contextual information, and expert insight and it is often embedded in documents or repositories as well as also in routines, processes, practices, and norms. (Davenport & Prusak 1998) Ployhart and Moliterno (2011) define the knowledge in the context of human capital as an understanding of principles, facts and processes, and which can range from generic to specific. Vargas et al. (2016) has defined human capital as the combination of tacit and explicit knowledge that belongs to the members of an organization. Lönnqvist et al. (2005) and Puusa and Reijonen (2011) also propose that knowledge is divided into two groups: explicit and tacit. Explicit knowledge is written, said or otherwise visible, transferrable and shareable. Tacit knowledge instead is hard to share and express with others. It is tied to experiences, feelings and other personal characteristics. (Nonaka 2007) Often, the tacit knowledge is hard to find even by the owner, which makes it difficult to manage. Still it is important for the organization to find the tacit knowledge and turn it into explicit. (Viitala 2005)

In the human capital literature, **competence**, capabilities, abilities and skills are mentioned as a part of human capital (e.g. Edvinsson & Malone 1997; Roos 1997; Lönnqvist et al. 2005; Ployhart & Moliterno 2011). Lönnqvist et al. (2005) and Viitala (2005) argue that skills, competences, know-how and capabilities are often spoken as synonyms and they mean the abilities, information and skills the individual has. According to Abel et al. (2008) competence is the way of putting into practice some knowledge in a specific context. Lönnqvist et al. (2005) talks about competences and has based the definition on the Viitala's (2005) structure of professionalism, which will be presented in more detail in Subchapter 2.3 together with the specific definition of competence. Ployhart and Moliterno (2011) and Edvinsson and Malone (1997) among others talk about skills as a

part of human capital. Skills represent a capacity to learn more information, or from other perspective, learn information more quickly. Skills reflect much of what is learned through formal education or experience. (Ployhart & Moliterno 2011) In this research, we will use *competence* as a definition for all skills, capabilities and abilities.

Lönnqvist et al. (2005) finds **education** as a part of human capital. Education has often an impact on the development of the competence, especially the substance competence, but not always. Sometimes the competences learnt in action are more important than education. (Lönnqvist et al. 2005) Ployhart and Moliterno (2011) and Abel et al. (2008) determine education as a way to learn more and gain for example knowledge. Many of the investments to human capital are made by the individuals through education (Abernethy et al. 2003, cited in Lönnqvist et al. 2005) **Experience,** on the other hand, reflects an opportunity to learn and transfer knowledge from generic to job and firm specific (Ployhart & Moliterno 2011). Experience refers to what has happened and what individuals have done in the past (Davenport & Prusak 1998) and it can be related to amount, time, and type (Quinones et al. 1995). As well as education, also experience, affects the knowledge and skills of an individual.

Personal characteristics, such as creativity, motivation, proactivity, trust and autonomy, are part of human capital (Lönnqvist et al. 2005). Edvinsson & Malone (1997) and Bontis (1998) mention also innovation and creativity of the organization's members as a part of human capital and Ployhart and Moliterno (2011) add stable characteristics: values, interests and personality to the characteristics. Each of the personal characteristics have effect on that how individual acts and works.

Roos (1997) and Lönnqvist et al. (2005) have defined **attitudes** as one of the human capital attributes. Attitudes are the tendency of people to use their skills and ability in their work (Roos 1997). Attitudes are often permanent and slowly changing but they are important because they define how the individual uses the competences and knowledge in their work (Ruohotie 1998). In this research we will include attitudes as a part of personal characteristics. The Figure 8 illustrates the individual human capital presented in this Chapter.

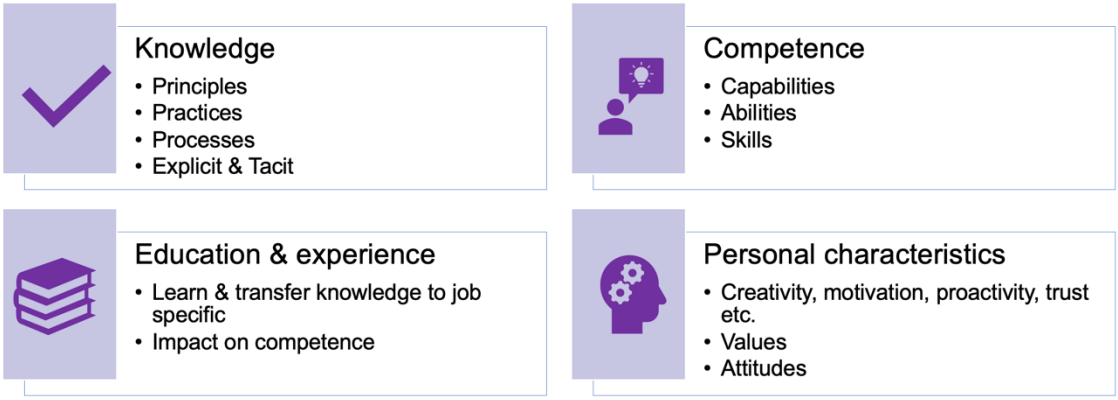

Figure 8: Attributes of human capital

Carson et al. (2004) divide the human capital into personal attributes and skills & competences. The difference between these two is that personal attributes cannot be modified, but skills and competences instead can often be modified. Ployhart and Moliterno (2011) discuss also about the stability of human capital, where cognitive ability, personality, values, and interests are often relatively stable and endure across time (Jensen, 1998; Kanfer, 1990, cited in Ployhart & Moliterno 2011). Knowledge, skills and experience instead, are not so stable through the adulthood (Ployhart & Moliterno 2011).

According to Roos (1997) and Roos et al. (2006) individuals control and own the source of organization's competitive advantage, knowledge. It is not enough that the organization has employees, they should have the right employees with the right competences (Viitala 2005). This underlines the fact that human capital is connected to individuals. Organization can invest in individuals, but it is important to notice that the capital will often leave with the individual from the organization. (Lönnqvist et al. 2005) By investing in their own personal human capital, individuals also invest in the business they choose to work. Their goals, values and aspirations guide their human capital requirements such as knowledge and skills. (Gratton & Ghoshal 2003)

2.2.2 Organizational perspective to human capital

The organization's understanding of its own success factors is the key to success. The importance of human capital and its managing is duly noted in the literature. Many managers claim that human capital is "*the most important asset*" in the organization (Fulmer & Ployhart 2014) and it has been emphasized to have important relation to the success of the organization (Boudreau & Ramstad 2008). According to Vargas (2016) many authors highlight the importance of members within organizations and also the importance of developing the potential to gain sustainable competitive advantage and organizational performance. Personnel explains part of the competitive advantage and organizational

performance of the company (Hussi 2004; Miller et al. 2015). According to Bontis (1999, cited in Vargas 2016), human capital potentially assures the long-term survival of an organization. Especially, in service industries like consulting, investment banking and IT services, knowledge is key competitive differentiator (Gratton & Goshal 2003).

Stewart (1997) states that human capital creates first wealth from the abilities and talent of individuals and then, through these individuals' work, creates value. The success of an organization is linked to the competence of its personnel, the utilization and development of its competence and its ability to acquire competence (Hyppänen 2013). Intellectual capital, organizational success and competitive advantage have an important relationship in private and public organizations even if the significance of intellectual capital might differ (Lönnqvist et al. 2005). If the human capital is tied to the success of the organization, it would be also natural to link it to the organization's strategy. According to Boudreau and Ramstad (2008) human capital is linked to the strategy since the human capital decisions should be linked to strategic goals. Organization should think for example, what human capital it will need in the future and where this capital could be acquired. Organization can and should also manage the human capital it has. (Hyppänen 2013) Bontis (1998) argues that the human capital is practically useless, if the organization is not able to utilize and nurture the skills. Though, Crook et al. (2011) point out that only particular, specific human capital is a key determinant of organization's success.

Crook et al. (2011) and Becker (1964) recognize two parts of human capital from the organizational perspective: firm-specific and general. Firm-specific human capital refers to skills and knowledge that are applicable in the specific organization (Coff 1997). Often the firm-specific human capital helps employees to make decisions that are aligned with firm's strategy, organizational context and competitive environment and for this reason it is valuable. (Mahoney & Kor 2015). Firm-specific human capital is often more valuable than the general human capital since it is only valuable in one organization (Crook et al. 2011).

Human capital is tied to individuals, but it is distributable and exploitable through the sharing of knowledge within an organization. Ployhart and Moliterno (2011) propose that human capital is a collective-level resource that has individual-level origins. Collective human capital is prone to change since it is formed by different individuals. Also, the organization has its own features and it creates a unique entity with the individuals (Ployhart & Moliterno 2011). If something in the entity changes, also the human capital changes (Nyberg et al. 2014).

Human capital is synergizing which means that individuals' competences, knowledge and skills create an entity that is bigger than the individuals. (Ployhart & Moliterno 2011) Edvinsson and Malone (1997) argue, that despite that the human capital is defined to be the skills, knowledge, capabilities and experience of all of the employees, it is actually more than the sum of these. Organization should be able to take advantage of these skills and competences and develop them even further.

2.3 Competence

In the literature human capital is often compared to competence or these terms are spoken even as synonyms. Competence has been defined as a part of human capital (e.g. Lönnqvist et al. 2005) and as in fact some have even defined that human capital and competence have the same meaning (Roos et al. 2006). Competence and human capital have also many of the same characteristics, such as the ability to examine them in organizational and individual level.

Competence is as a concept relatively difficult to approach and has been defined and classified in many different ways in the literature. The term is used for many purposes and there is no clear and generally accepted definition of it (Nordhaug & Gronhaug 1994; Baker et al. 1997). The term 'competence' is based on Latin verb '*competere'*, which means to be suitable (Nordhaug & Gronhaug 1994). Broadly competence has been defined as "*the set of knowledge, technical and professional abilities and skills that may characterize an employee, a group of employees or an organization*" (Thierry 1990, cited in Lache 2011). Often competence is linked to the knowledge and skills required for the job and its practical tasks (Nordhaug & Gronhaug 1994; Hyrkäs 2009). Since the definition of competence is vague, it can be difficult to know what is meant by competence. For example, according to Sydänmaanlakka (2000) competence can be seen at a department, team or individual level, and at every stage the definition is different.

Sydänmaanlakka (2000) presents different perspectives from which competence can be examined: organizational level, current situation vs. future and the content of competence. Organizational competence can be divided for example into individual and departmental competence, it can be examined in the current situation and in the future and the content of it can be related to different areas, such as core competence, general competence and process competence. (Sydänmaanlakka 2000) Also Kirjavainen and Laakso-Manninen (2000) and Prahalad and Hamel (1999) present that competence can be divided into different levels according to location: individual, organization and core competence.

Competence is defined differently in different levels. Individual level competence is very concrete, and it includes for example knowledge, skills, attitudes, experiences and contacts. On a team level, competence consists of the competences of the individuals and different combinations of these competences. On an organizational level competence is often very abstract and the term for organizational level competences is often core competences. (Sydänmaanlakka 2000) Organizational level competence requires understanding, how the organization's competences and capabilities can be used to reach the objectives (Lehtonen 2002).

The individual's competence can be divided into categories and can be visualized as an iceberg model, which is also known as pyramid model (see Figure 9). The iceberg is presented slightly different ways in different sources (e.g. Bergenhenegouwen et al. 1997; Garavan & McGuire 2001; Viitala 2005). The higher a competence is, the easier it is for an outside observer to spot. Those competences are also related to a specific task, when the lower levels present the personality and self-development (Viitala 2005).

Figure 9: Iceberg model of competence (adapted from Bergenhenegouwen et al. 1997; Viitala 2005)

The highest level of the iceberg consists of professional-specific competence that forms the core of professional competence. This competence is often learned through education. (Bergenhenegouwen et al. 1997; Viitala 2005) The second level includes organizational competence, which means competence that depends on a certain task and employer. This includes, for example, knowledge of the organization's business idea, external and internal networks, products and services, and systems. Organizational competence is created through experience in connection with work, but learning can be supported, for example, by effective orientation and internal communication. (Viitala 2005)

The third level competence includes general working life skills, which are widely applicable. These may include, for example, social skills, communication, and basic approaches to work and situations. (Bergenhenegouwen et al. 1997) Social skills refer to, for example, interaction and cooperation skills, the ability to recognize another's emotional states and the ability to resolve conflicts. Social skills include things that depend on a person's personality, such as the ability to empathize, but also things that can be learned, such as conversational skills and meeting techniques. Learning the iceberg's third level skills is already quite difficult and slow. (Viitala 2005)

The fourth level consists of individual's values, standards and professional ethics. These values and standards are internalized by the individual's insights, experiences and education. Developing or changing these things is a really long process. (Bergenhenegouwen et al. 1997) The fifth and the lowest level is built on the person's different personal characteristics. This includes, for example, pressure tolerance, positivity and self-confidence. Fifth level factors are very difficult to teach or develop. (Viitala 2005)

At the organizational level competence can be described with the term core competences. Strategic competence is often defined as the competences, which are vital for the implementation of the chosen competition strategy. This competence is called as core competence. (Viitala 2005) Core competences refer to the competences required by the organization to achieve its goals (Taatila 2004, cited in Viitala 2005). Core competences differentiate the organization from others (Long & Vickers-Koch 1995) and it should be something that is hard to imitate (Lönnqvist et al. 2005). Core competences are a way to connect the strategy and the competence. Vision and strategy create a frame for all operations, also for competence development. The objective is to break the core competences down to concrete competences. (Viitala 2005)

It is important to notice that in this research, the definition *human capital* is used to describe the individual and team level competences, knowledge and also the experience and education that effect the competence. In addition, the personal characteristics, attitudes and values are included into the definition. Human capital can be seen as a broader definition than competence which is why it is used to describe these aspects in this research. The research will still utilize both human capital and competence literature in order to reach the research objective.

2.4 Supplier's human capital in the information system projects

After defining the human capital and competence and reviewing them from individual and organizational perspectives, it is important to study, what the literature says about

them in information system projects especially from the perspective of the supplier. This subject is important especially for an organization in the knowledge intensive industry, such as Information Technology (IT) service providers and IT projects. The success and efficiency are based on the human assets in the organization and the importance of them in the business should not be underestimated. According to Fui-Hoon Nah et al. (2001) the key players in project phase are the project manager, customer's project team members (from business units and functional areas) and IT specialists, vendor, and consultants. Consultants often fill the gaps in information and knowledge and have the needed experience on specific areas (Barth & Koch 2019). According to Hamani et al. (2012) the team often consists of project manager, steering committee, process manager and working teams. Each of those working teams that cover the functions of the processes have a consultant and customer's members. (Hamani et al. 2012). In addition to these, the sales phase often requires also sales manager, whose responsibility is to contact the customer and take care of the contractual issues. In this chapter, the human capital of the supplier is taken into account from the perspective of consulting and technical consulting. The project management and sales do not specifically differ in hotel industry from any other industries and projects, so it is seen that also these roles need at least partly the same human capital as consultants in hotel industry projects. These roles consist the project team, which works closely with the client and each person have their own responsibilities in the project team.

Already in 1999 Pinto and Millet included implementation team as one of the critical success factors of information system implementation. Dezdar and Sulaiman (2009) have studied the critical success factors of the enterprise resource planning (ERP) implementation from the existing literature and according to them the project team composition, competence and compensation is one of the most important factors in successful implementation. Also, for example Fui-Hoon Nah et al. (2001), Somers and Nelson (2001), Finney and Corbett (2007) and Bradley (2008) agree with this argument. Other critical factors are for example project management (Fui-Hoon Nah et al. 2001; Somers & Nelson 2001), vendor support (Somers & Nelson 2001) and top management support (Fui-Hoon Nah et al. 2001; Somers & Nelson 2001; Finney & Corbett 2007).

In the project, partners must be knowledgeable in the area of focus and work closely and well together to achieve the organizational goals. (Fui-Hoon Nah et al. 2001) Somers and Nelson (2001) argue that project team skills and knowledge are important together with the consultants, who provide expertise in areas where team members lack knowledge (Barki et al. 1993; Cameron & Meyer 1998; Clemons 1998, cited in Somers & Nelson 2001). Consultants may have experience in specific industries, comprehensive

knowledge about certain modules, and may be better able to determine, which will work best for a given company (Piturro 1999). Also, skills such as technical skills (Pinto & Slevin 1987) and problem-solving skills in cooperation with vendors are important (Fui-Hoon Nah et al. 2001). In consultant-customer partnership especially technical competence, domain knowledge, consultant competence and effective communication are seen as crucial factors. (Dezdar & Sulaiman 2009) Often the lack of knowledge, skills or experience is filled up with a consultant, who has the missing capital (Laughlin 1999). Markham (2004) defines consultant as a person who is providing knowledge-based services to an organization on a contractual basis.

There is not much academic research on the IT consulting human capital, competences or skills specifically. The research is quite old or focused on consulting skills from other perspectives. Huang et al. (2009) has divided the IT job skills into three categories that are business, technical and humanistic job skills and discovered the skills in academic studies, practitioner publications and job ads. As a conclusion of all of these the humanistic skills refer to communication, interpersonal (teamwork, leadership) and basic work skills, such as dependability, creativity, proactivity and ability to handle ambiguity. Business skills focus on presentation skills, customer relations, problem-solving and analytic ability. Technical skills include different skills from operating systems to integrations and programming. (Huang et al. 2009) IT consultant needs to have the technical skills but that is not all needed. Skill of understanding the customer is also important to solve customer's challenges. (Pratt 2007) Research and surveys on future trends show that analytical, financial, decision-making, and persuasion skills are critical for IT employees to be able to guide and influence technology decisions. (Gorman 2011) Also Banai and Tulimieri (2013) emphasize the communication, analytical and creativity skills of any consultants. Creativity skills with analytic skills are the combination that makes the most out of the customer's problem.

Customer communication skills are one of the most important skills of consulting (Djavanshir & Agresti 2007; Huang et al. 2009; Banai & Tulimieri 2013). IT consultants must be proactive in communicating with customers. Through communication, the consultant can avoid potential pitfalls, disappointments, and frustrations and provide services that guarantee customer satisfaction throughout the cycle of customer engagement. Communication does not include only the active communicating but also listening since the customers might have trouble communicating their problems. It is the consultant's role to ask the right questions and resolve customer issues. (Djavanshir & Agresti 2007) The top three skills that are sought in IT job applicants are communication, teamwork and problem-solving skills (Pratt 2007).

Since the information system projects include also some technical work, we will also cover some research of software engineer's human capital. According to Colomo-Palacios et al. (2013) the technical and more generic competences needed depend on the role of the software engineer but often at least the basic competences are required from everyone. Technical requirements include for example software requirements, design, testing and engineering tools. General requirements refer to competence in communication, creativity, teamwork, problem solving and leadership. The general skills are more important in manager roles and technical skills in lower positions. (Colomo-Palacios et al. 2013) Technical, social and personal competences are important. Not only the use of technology is important for software engineers, but they need to be able to work in teams, communicate, be proactive, flexible and prioritize the work among many other characteristics. (Rivera-Ibarra et al. 2010)

Banai and Tulimieri (2013) have studied mostly the business consulting requirements but it can be said that IT consulting and business consulting have some of the same features. Banai and Tulimieri (2013) bring up personality and emotional stability as a part of effective consultant requirements. For example, self-control predicts good adjustment, interpersonal success (Tangney et al. 2004), and self-confidence affects to the ability to trust on others and admit existing better alternatives (Banai & Tulimieri 2013). Also, curiosity is an important motivational component (Kashdan et al. 2004). An interesting perspective is also the ability of a consultant to be commited to customer since the consultant is then committed to achieve someone else's objectives. (Banai & Tulimieri 2013)

As a conclusion it can be said that there is not much research on the human capital of the supplier organization and its members. Though it has been also indicated that often the customer's lack of knowledge, skills or experience is complemented with a consultant, who has the missing capital (Laughlin 1999). This capital includes a lot of technical skills, but also soft skills as Huang et al. (2009) introduced the division to business, technical and humanistic skills. The most important competence in IT projects seems to be the communication and teamwork skills together with the technical skills according to researchers.

2.5 Human capital management

After defining the human capital, competence and them in the information system context it is worthwhile to study the two perspectives of management that are strongly related to human capital: intellectual capital management and competence management.

Intellectual capital management

Intellectual capital management is focused on utilizing the organization's intellectual capital in business operations. According to Wiig (1997) "*intellectual capital management focuses on building and governing assets from strategic and enterprise governance perspectives with some focus on tactics. Its function is to take overall care of the enterprise's intellectual capital.*" According to Roos et al. (2006) the intellectual capital management increases understanding of what value that organization creates and how. In addition, it increases understanding of how the value creation could be improved.

Lönnqvist et al. (2005) has divided intellectual capital management into two parts (see Figure 10): intellectual capital governance and intellectual capital development. Intellectual capital governance includes mostly strategic level actions, where intellectual assets are evaluated and managed. In governance, for example intellectual capital investments, assessment and reporting, are the key functions. Intellectual capital development instead focuses on operational level actions, such as developing customer relationships and increasing competence. Methods for development are for example development discussions and knowledge management. (Lönnqvist et al. 2005)

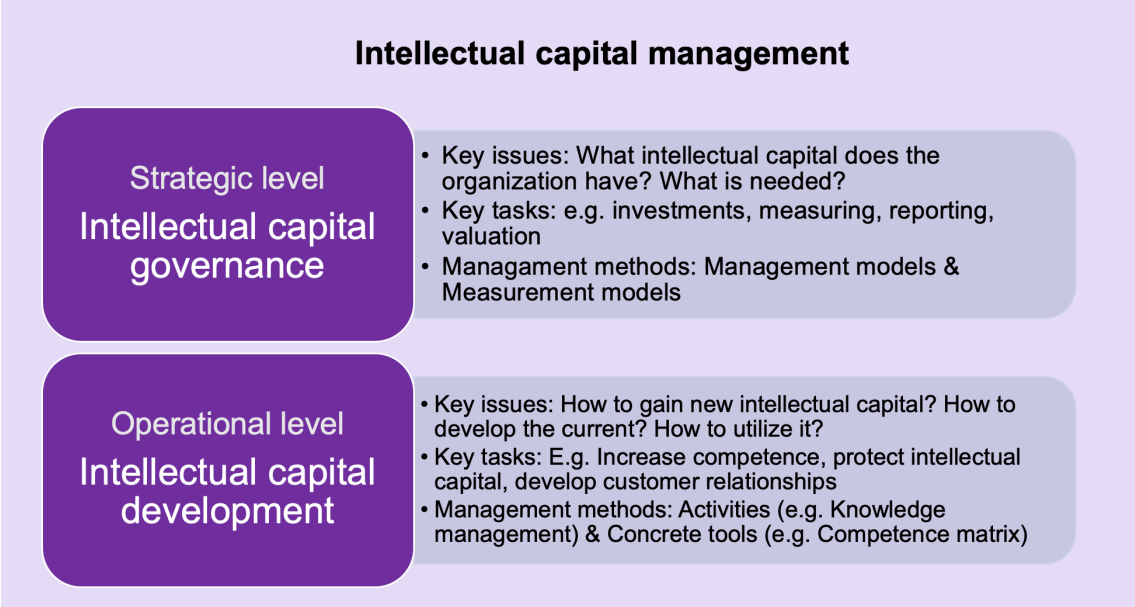

Figure 10: Intellectual capital management framework (adapted from Lönnqvist et al. 2005)

According to Kujansivu (2008) intellectual capital has been managed in companies by using traditional management approaches, such as human resource management or strategic management even if the intellectual capital management definition is quite mature. Though, it is unclear, how the factors differ when they are managed along with traditional management methods and in the intellectual capital management context.

(Kujansivu 2008) Intellectual capital management has many models, methods and key figures that can be used in managing and measuring it. For example, Intangible Assets Monitor (Sveiby 1997), Value Chain Scorecard (Lev 2001), Balanced Scorecard (Kaplan & Norton 1992), Knowledge Audit Cycle (Marr & Schiuma 2001, cited in Lönnqvist et al. 2005) and (Skandia) Navigator (Edvinsson & Malone 1997) are models that can be used in intellectual capital management. The management frameworks and models can be divided into five categories according to Lönnqvist et al. (2005): multidimensional measures, management processes, reporting models, key figures and other approaches to management and measurement. For example, reporting models are used to communicate the intellectual capital to stakeholders and the key figures present the intellectual capital with a single measure. Often measurement can be designed by using for example the Intangible Assets Monitor -model, because they give instructions for choosing metrics and completing the measurement. (Lönnqvist et al. 2005) Since this research focuses on only one of the intellectual capital areas, these models will not be covered in more detailed level.

Some practitioners have focused on human capital management specifically. For example, Ingham (2007) has focused on strategic and quite general level human capital management, which includes also the measurement of human capital. Ingham has focused on the Value Matrix, Score cards and Return on investment when measuring the human capital. Baron and Armstrong (2007) also talk about human capital management and measurement but keep it on strategic and organization wide level trying to understand for example data of number of leavers, absence rates and performance of the employees. They define the management to include also the purposeful measurement of human capital. The human capital management literature is focused on assessing the impact of human resource management practices and the contribution of people to bottom-line performance. This level management does not give us entirely the answers that we are looking for in order to conduct the measurement of the current human capital.

Competence management

Competence management is often discussed in the human resources and leadership literature. The success of an organization is linked to the competence of its personnel, the utilization and development of its competence and its ability to acquire competence (Hyppänen 2013). The most important part of competence management is raising and nurturing the level of competence of the people operating in the company and utilize it efficiently. Competence management refers to strengthening and ensuring the organization’s operations and competitiveness by means of a competence base. (Viitala 2005)

Due to the great importance of competence, the connection of competence management to strategy is now often emphasized (Nordhaug & Gronhaug 1994; Sydänmaanlakka 2000; Viitala 2005) Competence management is a part of strategy implementation (Viitala 2005) and the top management should take the responsibility of managing the competence (Nordhaug & Gronhaug 1994). According to traditional strategic thinking, structures and resources, such as competence, adapt to the organization's strategy and serve as a tool for implementing the strategy (Baker et al. 1997). In this approach, organization often looks at the market and tries to find the optimal opportunities from there (Viitala 2005). Another approach is to see it from bottom-up, which means that strategy is built on the resources of the organization. This resource-based approach explains companies' different success with differences between resources and their utilization. (Lönnqvist et al. 2005) The core competence term is also linked to resource-based approach. Often the company's strategy is formed between the resource-based approach and traditional approach. The company is dependent on the current competence, but the market and industry define, what the organization should offer. (Viitala 2005)

The competence management process (see Figure 11) starts often with defining the organizations strategy and vision and the competences according to them (Viitala 2005). Organization has several factors that define the organization's success and the success is based on defining the strategy. It is also important to think, if the current competence is enough in the future. (Hyppänen 2013) The comprehensive competence management is possible through the identification of the current situation and choosing the future direction. If the organization does not know the desired future state, the actions towards it are impossible to create. The measurement of the competence should be done after defining what the competences should be. (Viitala 2005) After that the process continues with recognizing the competence goals, existing competence in the organization and the gap between these two. Finally, the development measures are selected, learning is supported, and the outcomes are monitored and evaluated. (Hyppänen 2013) It is important to understand that the competence management should be continuous and not one-time activity.

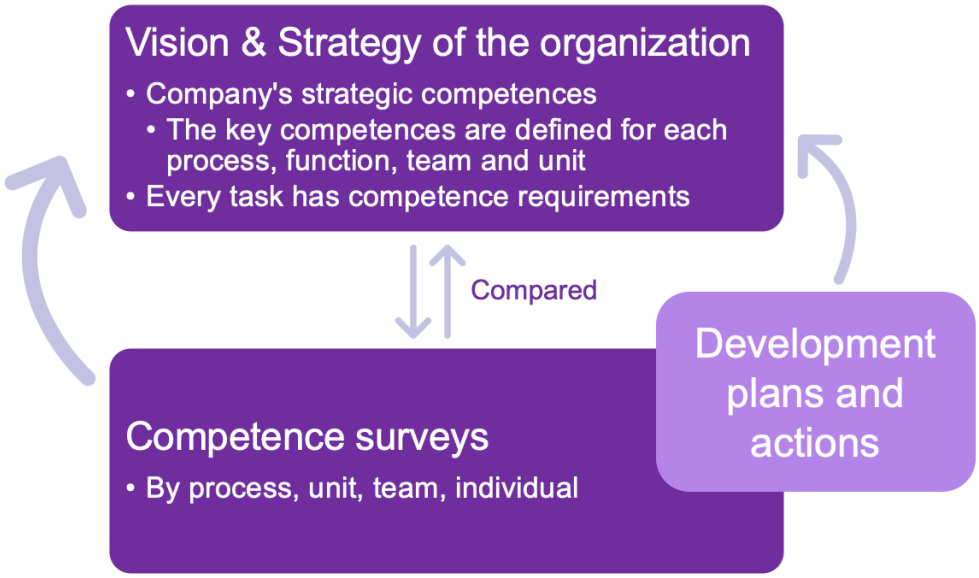

Figure 11: Competence management process (adapted from Viitala 2005; Hyppänen 2013)

Both perspectives emphasize the strategy linkage. Intellectual capital management recognizes the strategic and operational level of management and competence management identifies the linkage to strategy and vision. This research will focus on the competence management framework. In this case, the intellectual capital management entity is too broad since we are focusing only one of the aspects of intellectual capital. Human capital and competence are often used as almost synonyms and are very close to each other as a term, which is also one reason to focus more on competence management literature. It is still important to understand that the research will utilize literature and research related to both, intellectual capital management and competence management.

2.6 Human capital measurement

Since the empirical research includes also measuring the human capital, it is important to go through the literature associated with it. According to Viitala (2005) performance assessment has been done for decades, but the competence assessment is still rather new area. We will utilize literature from intellectual capital and competence measurement as well as some performance and general measurement to define the human capital measurement in this context. It is also important to note that the literature utilizes also other terms for measurement. Often measurement is also defined as *assessment* (e.g. Viitala 2005) or in performance appraisal literature as *appraisal* (e.g. Wilkinson & Redman 2001) or *evaluation* (Robbins 2002), but in this research, we will use measurement as a definition to measure the human capital. This definition can be seen as a broad

definition that includes also the other terms in use. Viitala (2005) has defined the competence assessment as defining the competences and the gap between desired and current state. Competence assessment directs the employee attention to areas where there is scope for improvement (Wilkinson & Redman 2001).

Competence measurement has mostly the same challenges as measurement in general in the organizations. For example, only important factors should be measured, methods should be simple, understandable and transparent. (Viitala 2005). According to Laitinen (2003) measures should be evaluated on their relevance, affordability, validity, reliability and credibility. Intellectual capital measuring is often perceived as challenging in organizations since intellectual capital is non-physical and involves subjective interpretation. (Lönnqvist et al. 2005)

The measurement process includes three major steps, which are designing the measures, implementing them and using them as a part of organizations activities and processes (see Figure 12). The design phase starts from a need for some measurement. The areas of measurement are decided, measures are planned and defined. After the design phase, the measures are implemented and taken into use in the organization. This means also that the measures are evaluated and, if needed, changed during the process. (Lönnqvist et al. 2005)

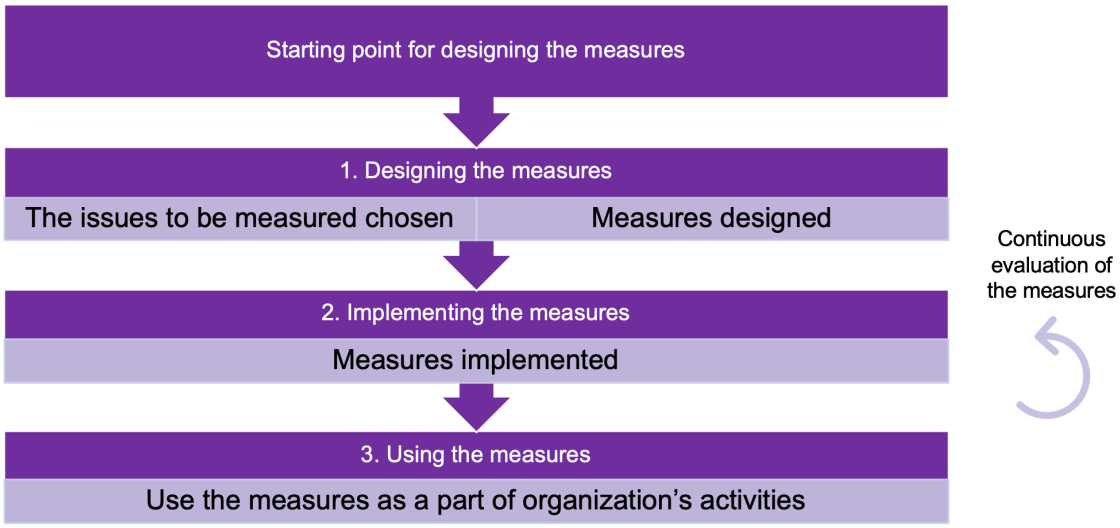

Figure 12: Steps of measurement process (adapted from Lönnqvist et al. 2005)

The design of measures will be covered in more detail later in this chapter. Before that we will shortly look the two other steps: implementing and use of the measures. The implementing will cover technical and functional issues (Malmi et al. 2002). For example, information systems required for the measurement and reporting, gathering the information, analyzing it and evaluation of the measures (Lönnqvist et al. 2005). The

measures are often used in decision making, controlling, learning and external communication (Simons 2000). Due to the nature of intellectual capital, it is often difficult to measure them, and the measures might be incomplete in terms of the validity and reliability (Lönnqvist et al. 2005). According to Lönnqvist (2004) it has been though detected in studies that even with incomplete measures, it is possible to obtain actions in organizations. In this research we will mostly focus on designing of the measures and also implementing them. Next, we will go through the designing steps.

Designing the measures

Before designing the measures, it is necessary to consider the reason for the measurement. According to Uusi-Rauva (1996) performance measurement can be done in the following purposes:

- Controlling
- Monitoring
- Designing
- Alarming
- Diagnostic
- Learning
- Information
- Compensation.

Most of the presented purposes are also suitable for measuring human capital. Measurement can be utilized, for example, in determining development needs, enhancing the utilization of human capital, and finding people to be promoted. According to Lönnqvist et al. (2005) measurement made for control purposes does not need to be exact. But if the purpose is compensation, it should be as objective, accurate and reliable as possible. It should be also considered if the measurement is done for internal or external stakeholders. (Lönnqvist et al. 2005) Every measurement should be done on the basis of its needs in order to serve the purpose. In the competence measurement areas, their competences and the evaluation of every competence level now and in the future are defined. (Hyppänen 2013)

Measurement can be done either directly or indirectly. Direct measurement is not always possible, which means that indirect measurement needs to be done. It means measuring something that is known to indirectly affect the issue measured. (Lönnqvist et al. 2005) Organization’s competences are hard to describe and specify as a whole due to the

dynamism and diversity of them (Viitala 2005). This makes the measurement very difficult. Often human capital measurement is done through indirect measuring such as with the following measures: annual investment in training, training cost per person per year and the share of persons in training in the total staff (Lönnqvist et al. 2005).

Measures can also be subjective and objective. Objective measures measure concrete functions that can be perceived as outputs. Traditionally objective measures are considered as reliable and good measures because they give very objective results. On the other hand, though, everything cannot even be measured with objective measures and the overall picture might not be as accurate as possible because the objective measures often measure only part of the desired area. Subjective measures are often based on opinions or estimates that are given in interviews or inquiries. Subjective measure often gives a broader but also more inaccurate picture than objective measures, but they are harder to create. (Lönnqvist et al. 2005)

Selection and grouping of human capital to be measured

The measured human capital needs to be selected, since only after that, it can be thought, how these are measured. The competences could be selected by utilizing employees' own ideas (Viitala 2005). Also, the strategy and defined core competences can be utilized. Through the core competences, it is possible to consider the more concrete knowledge and skills they require for organizations' different tasks and units. Also, the competences should not be limited only to job-specific knowledge but also attitude and skills, such as problem-solving, ability to learn and interpersonal skills, should be taken into account. (Kirjavainen & Laakso-Manninen 2000; Viitala 2005) Hansson (2001) emphasizes that competences should be chosen as task-specific as possible.

Viitala (2005) argues that a common discussion in the organization about the competences should be based on some sort of model or list to have a starting point. It enables the discussion to be more structured and they direct the evaluation of competences. In order to the design process to be successful, the operational level employees should take part to design the measures (Institute of Management Accountants 1998, cited in Lönnqvist et al. 2005).

One way to identify competences is the competence list. It is a list of the skills required by the job. The list does not necessarily take a position on the relationships or priorities of competences. The list can have different classifications, such as according to areas of expertise. (Viitala 2005) Lönnqvist et al. (2005) introduces also the competence matrix, which is a summary of the team's competences. It is based on the competence list, but

it includes also the evaluations for each competence and each employee. In this research we will use the competence list under name *human capital list* to highlight the research objective.

Measurement identifies how individuals should develop in order to match the goals. Often the required competences are defined together with employees and can also be based on core competences and strategy. Measurement cannot focus on all of the areas of competence at the same time. (Viitala 2005)

Choosing the evaluator

In most cases, the measurement is performed by the person itself, by supervisor or by colleagues (peer review). In addition to these, the review can be performed also by external consultants or human resources specialists. (Kehä & Valtiovarainministeriö. Henkilöstöosasto 1995) All of these methods have their positive and negative aspects.

According to Viitala (2005) the evaluator of the individual competence is the person itself. This gives individual an opportunity to understand better their own competences and development needs and also bring up hidden human capital. According to Cheung (1999) the individual evaluations can be more specific than evaluations made by supervisors. The reason could be that the supervisor's knowledge of the individuals is limited. (Cheung 1999) Viitala (2005) emphasizes that the supervisor's role in evaluations cannot be underappreciated. The individual evaluations should be part of supervisor's normal job and their views bring a good base for evaluations. (Viitala 2005)

Peer reviews can be very reliable, since the colleagues are often constantly in touch with the person being evaluated. On the other hand, employees may be relatively reluctant to evaluate each other. (Robbins 2002) For example, competition and jealousy among employees are problems in peer reviews (Viitala 2005).

Several evaluators tend to improve the reliability and accuracy of the measurement. Use of multiple evaluators also increases the workload, but one way to improve is to compare measurement made by employee and the supervisor. (Hansson 2001)

The selection of the evaluator is tied to the purpose for which the results of the measurement are used. Of course, the choice is influenced by the fact, what is measured. If the measurement is focused purely on competence, the value of the measurement made by employees is high. This helps to find for example hidden competences. Self-evaluations for educational needs probably provide more reliable information for training needs than for compensation and promotion decisions (Hansson 2001).

Measuring the level of human capital

When it has been decided, what should be measured and who will do it, the next step is to decide, how human capital should be measured. The basic assumption in measurement is that competence accumulates cumulatively from a lower level to a higher level. In some cases, it can be also thought that the person has a competence or not. (Viitala 2005) Different levels can be described in different ways. Competences can be measured by numerical scale or in written form. (Viitala 2005; Hyppänen 2013) Numerical scales are not as specific as written evaluations, but they are easier to compare (Robbins 2002). 3-5 step scales are common (Kirjavainen & Laakso-Manninen 2000; Hyppänen 2013). For example, Hyppänen (2013) has divided competence into 6 step scale (see Table 1), where 0 means that it is not part of the employee's tasks and 5 means that the employee is a master in this task. Räsänen (1996, cited in Viitala 2005) has described the levels of work orientation to 1) Beginner 2) Advanced beginner 3) Qualified performer 4) Outstanding author 5) Expert. Most important is that the scale is understandable and clear. The content of each level should be accurately described.

Table 1: Example of the competence levels (Hyppänen 2013)

Level	Name	Description
0	Not part of job	Does not know about the task or is not part of the job
1	Beginner	
2	Trainee	Knows the basics and routines
3	Qualified performer	Knows the tasks but needs guidance and support
4	Professional	Can act independently
5	Master	Is able to develop and guide

In particular, in measurement done by employee, the measurement often measures two different issues: the level of competence in individual competences and the opinion about the importance of these competences in the job since it might be a way to handle problems with the variation in the importance of different competences. (Hansson 2001).

3. HOTEL INDUSTRY AND INFORMATION SYSTEMS

3.1 Hotel industry

Since the objective of this research is to understand the human capital especially in the hotel information system context, it is important to cover also the hotel industry and hotel information systems in the theory part. In this chapter, we will go through these areas as well as the sales and delivery process of an information system.

Hotel Industry is often defined to be a part of hospitality and tourism. The World Tourism Organization (UNWTO) defines tourism as travel and residence for leisure, work, or other purposes lasting no more than one year but not less than one day in a place other than a person's usual habitat. Tourism as an industry is a rather large entity, which includes several industries, such as travel booking, transportation, accommodation and food. (Jänkälä 2019) According to WTO tourism has reached the position as the third largest industry in the world (World Tourism Organization (UNWTO) 2019). Accommodation activity is defined as the professional provision of furnished rooms or other accommodation to customers in need of temporary accommodation (Valorinta 2008) and this is the primary product of the hotels (Rautiainen & Siiskonen 2015). Accommodation and hotel industry are also a part of hospitality service industry, which is in the Oxford English Dictionary defined as friendly and generous reception and entertainment of the guests and visitors (Beaver 2012). The hospitality is identified as a part of the tourism or considered as one of tourism types. It can be said that hospitality has two main sectors: accommodation and food and beverage. (Langvinienė & Daunoravičiūtė 2015; Stringam & Partlow 2016)

According to Statista the market size of the global hotel industry from 2014 to 2018 has grown from 466 billion U.S dollars to over 600 billion U.S. dollars (Lock 2019). In Europe (22 countries) there are 146 616 hotels and over six million bedrooms, 18 575 chain hotels, which makes 13% of the overall market (Horwath HTL 2019). In the Nordics though, hotel industry is slightly different compared to the global situation. According to PWC (Pedersen et al. 2017), Scandinavia is dominated by local operators and international brands are not present. Also, the guests are mostly regional, but the international visitors are also growing. In 2018, more than 22 million overnight stays were registered in Finnish accommodation services, of which 15.4 million were domestic and 6.8 million foreign overnight stays. The growth of the overnight stays from the previous year was

1,5 %. (Työ ja elinkeinoministeriö 2019). Average growth of the number of foreign overnight stays during the 2015 to 2019 has been 4% per year (Business Finland 2020). Hotel industry is a growing industry in Finland and Nordics, which makes it an interesting industry for also information system providers and delivering companies. Next we will go through the different hotel types and the accommodation product in more detail.

3.2 Hotel as a product

The key product of the hotel is the accommodation service (Medlik 2000; Rautiainen & Siiskonen 2015). In addition, the hotel can offer food and beverages or other supporting services, such as gym, pool and activities. Some hotels offer also meeting rooms, sauna, car rental, spa and activities from guided tours to beauty salons. (Rautiainen & Siiskonen 2015) As an extend, hotel restaurants, bars and other hotel facilities may also serve the local population, but still the primary function of a hotel is to accommodate travelers (Medlik 2000). The business idea of the hotel defines the target group and the required services. Many hotels offer something for everyone, but some hotels are more focused on for example business travelling. (Rautiainen & Siiskonen 2015) The key product of a hotel and its possible supporting services are illustrated in Figure 13.

Figure 13: Key product of a hotel and its possible supporting services

Hotel industry has some elements that differ from many other industries (Langvinienė & Daunoravičiūtė 2015; Stringam & Partlow 2016). Services can have tangible elements, such as the hotel room, but more often intangible elements are what create the extra value to the service (Hassanien et al. 2010, cited in Langvinienė & Daunoravičiūtė 2015). Another characteristic is the inseparability, which means that the service is provided and

used at the same place and cannot be stored until the service is demanded. Third characteristic is the perishability and it describes the limited time that the service is provided. (Langvinienė & Daunoravičiūtė 2015) A room not sold is lost forever. The fourth characteristic is the non-quest buyers, which basically refers to the travel agents and contract rooms. These customers might have different demands and needs, which is crucial to understand. (Stringam & Partlow 2016)

Hotels can be divided into categories according to ownership, size, location and target group (Rautiainen & Siiskonen 2015). Medlik (2000) suggests also range of facilities, services and purpose of visit, which can be holiday, business or other, as a way to categorize hotels. Hotel is a market concept, which is an institution of commercial hospitality. It offers facilities and services for sale, individually or in various combinations. The concept is made up of five elements: location, image, price, facilities and service. (Medlik 2000)

There are numerous categories for hotels as previously presented. One way to categorize them is the purpose visit. In this case the categories could be business hotels, conference hotels, resorts, spas and budget hotels. Business hotels are often located in the center of city, include versatile services and they are intended for business travelers. Resorts are meant for several days of leisure activities and offer activity services along with meeting and congress services. Spas are also designed for leisure travelers and offer program services along with the accommodation. Budget hotels have often only few services and they are mostly focused on the accommodation. (Rautiainen & Siiskonen 2015)

Another way to divide hotels into categories is based on the ownership of the hotels: independent hotels, chains and brands (Rautiainen & Siiskonen 2015; Valorinta 2008). Hotel chaining types can be further divided into categories: proprietary chains, franchising, representation companies and marketing communities according to the marketing and distribution channel. Proprietary chains mean that the chain owns all the hotels. (Valorinta 2008) Franchising hotels have private owners, but they are part of a chain and follow the given standards (Valorinta 2008). This gives them an opportunity to use the brand and name (Rautiainen & Siiskonen 2015). Marketing communities are often a consortium of hotels established for the local market. The goal of the community is to support the business by common brand and marketing. (Valorinta 2008) In marketing communities the product is not standardized, and commitment may be low (Rautiainen & Siiskonen 2015). Representation company is a commercial actor that offers a central reservation system for the hotel. (Valorinta 2008)

Each hotel is different, and hotels can have very different operational environment according to the hotel's services and physical environment. The base of ownership, location, services and image can have effect on, what it does, how it works and who is the customer target group. In this research we will focus on Finnish hotel chains, which offer also other services such as restaurant and bar in addition to accommodation. Next, we will go through the most familiar main processes and functions that are part of hotel business starting from room distribution and reservation to the time customer is staying at the hotel and finally leaving it.

3.3 The processes, functions and departments in hotels

The main functional departments of a full-service hotel include accommodation including housekeeping & maintenance, Food & Beverage, Sales & Marketing, Human resources and Accounting (Rutherford 2002; Lashley & Lee-Ross 2003). Figure 14 illustrates the different functions and processes of the hotel.

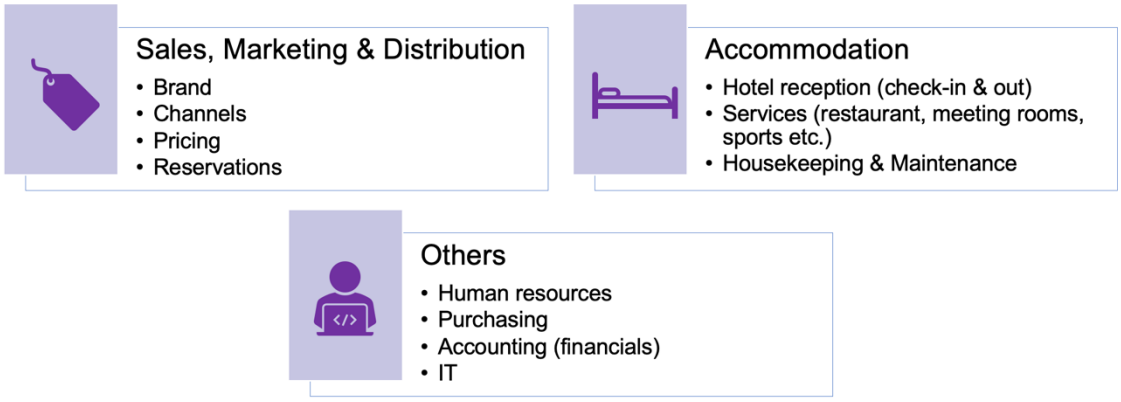

Figure 14: Hotel functions

In hotels, as in any service industry, the customer is at the center of the service (Ratna et al. 2018). For example, some hotels use the 100% customer satisfaction guarantee to ensure the satisfied customers (Rautiainen & Siiskonen 2015). This means that almost everything that the hotel does, the processes and functions, is connected to the customer and its needs. The customer journey often starts from the reservation, which means that hotel rooms need to be distributed and marketed. After the reservation, at some point, the customer arrives to the hotel, stays there and possibly uses the hotel's other services as well and finally leaves the hotel.

Sales, Marketing & Distribution

The reservation service is the first contact point for the guest before the stay at the hotel. The booking operations in the hotel point of view, include hotel room reservation, implementing the work process of booking a room including providing confirmation of the room, archiving room orders and checking the situation of the sold and unsold rooms. (Ratna et al. 2018) The value chain of hotel reservations is an important part of the hotel industry, since the product for sale cannot be stored. One of the biggest challenges in business are the brand and distribution of the rooms. (Valorinta 2008)

Hotels have the sales and marketing department (Rautiainen & Siiskonen 2015; Rutherford 2002). Often the sales does personal sales work over phone and makes reservations to hotels, takes care of the contracts with other sales organizations, handles the feedback and customer register and takes care of the group reservations and presentations. In addition, they often take care of the marketing material, advertisement, direct marketing and sales promotion. (Rautiainen & Siiskonen 2015)

In operationally the hotel reservations consists of three parties, which are the hotel, customer and the third-party agent. Third-party agent can be for example travel agency, online booking service or travel search portals and its purpose is to market and forward the reservations. Third-party agents will often get a commission for the rooms sold. Hotels can also have their own distribution channels such as websites and availability to call to the hotel. (Valorinta 2008) The reservation itself can be sorted into individual reservations, which are done by private persons and group reservations for more than 9 persons. Some customers, such as companies or third-party agents, can also have reservation allotments, which means preserved room allocation for the specific customer. (Rautiainen & Siiskonen 2015)

The pricing of hotel rooms is also important part of the distribution and reservations. Hotel pricing model has been adapted from airline revenue management (McGuire 2016). Revenue management is a type of supply-demand management and it acts in prices and capacity. The principal is to manage capacity and through that maximize revenue. (Fyall et al. 2013) Since the hotel industry has limited capacity, perishable inventory, segmentable and time-variable demand and low-cost sales, the revenue management suits well for it (Kimes 1989, cited in McGuire 2016; Fyall et al. 2013). Online travel agents (OTAs), price transparency, booking apps, social media and review sites have made the market dynamic and transparent. Customer has access to price and value information of the hotels. This has led to situation, where the revenue management has evolved and reached a strategic role in hotel industry. (McGuire 2016) Kimes (2011)also

highlights that the revenue management will move more from rooms revenue to a more strategic focus on total hotel revenue. Revenue management is based on customer analysis, segmentation and pricing policy. Pricing decisions take into account all the opportunities and market characteristic changes, such as event changes and competitor action. (Fyall et al. 2013) Often, for example loyalty cards give the customer better price for the hotel room (Rautiainen & Siiskonen 2015). As a conclusion, the pricing in hotel industry is not simple, instead it depends a lot about external and internal factors.

Accommodation & Services

The three main hotel activities and components of hotel accommodation function are hotel reception, uniformed services and housekeeping. These are also the activities that earn the room revenue. (Medlik 2000) Uniformed services often guide the customer to choose a hotel and increase customer satisfaction (Rautiainen & Siiskonen 2015).

Front office is a term used in hotels to cover the reservations, room allocation, reception, billing and payments (Abbott & Lewry 1999; Ratna et al. 2018). It is the place, where customer mostly goes first, when they arrive at the hotel (Rutherford 2002). Front office takes also often care of the enquiries as well as the customers overall stay (Baum & Odgers 2001). The front office is often physically taken care from reception which is also called as the heart of the hotel functions. Reception and its employees have an important role in customer service and customer satisfaction. (Rautiainen & Siiskonen 2015)

Housekeeping is an essential part of the hotel processes. It consists of room cleaning, laundry services, minibar service and overall cleanliness. Housekeeping can be taken care of by hotel's own organization, external service provider or mix of them both. However, the information flow between the reception and housekeeping is crucial since the housekeeping needs to know which rooms should be cleaned and reception should know which rooms are available for customers. (Rautiainen & Siiskonen 2015) The maintenance is also important part of hotel and its physical plant and renovations and it should have a direct communication channel with housekeeping and front office (Rutherford 2002).

In addition to the accommodation, hotel can have additional services, such as restaurant, spa, meeting rooms and sports activities. Hotels can also have for example optional amenities, such as breakfast in room, entrance tickets to shows, room service or laundry services. (Rautiainen & Siiskonen 2015) The food & beverage department's primary function is to provide food and drink for the customers but also support the overall goal of the property and gaining a competitive advantage over other hotels. There can be

great diversity of activities related to food and beverage within the department, such as bars, restaurant, room service and catering. (Rutherford 2002)

Other departments and functions

Other departments at the hotel are human resources and accounting, where Rutherford (2002) has also included purchasing and IT. These are not directly linked to the customer, but they are crucial part of the hotel processes and business, as in every other organization.

The human resources department can be divided into recruitment, benefits administration and training (Rutherford 2002). Hotels are often concerned with attracting talent and retaining people over time. Also, training is top four issue of concern on hotel managers' minds. (Enz 2009) Accounting instead records the financial transactions, prepares financial statements and provides management with timely reports of operating results. It also controls the costs, such as rooms, food and beverage. It is responsible for collecting and reporting statistics about operations and financials. (Rutherford 2002) The purchasing function takes care of the product research, vendor selection, order and delivery management and much more. The support of hotel operations is a basic contribution of purchasing. Purchasing is responsible for the proper quantity and quality of the goods needed. (Riegel, cited in Rutherford 2002) Since the success of any hotel depends on the ability to control and utilize the information available (Rutherford 2002), also the IT is important part of hotel functions. We will go through the information systems in more detail in the next chapter.

3.4 Hotel information systems

Digitalization changes organizations and their operations. It improves the processes and makes the organization faster, more efficient and improves the quality. (Ilmarinen & Koskela 2015) Today, digitalization does not only give competitive advantage, but it is also often the lifeline for organizations. Companies across industries need the ability to pivot rapidly to pursue new business opportunities and keep up with a fast-changing global business environment (Parida 2018). According to Buhalis & Costa (2005) and Chauhan and Singh (2017) hospitality industry is highly dependent on successful information system management. Adopting new IT in hotels is essential to achieve a sustained competitive advantage (Ham et al. 2005; Bilgihan et al. 2011; Pereira-Moliner et al. 2016). What is interesting though, is that hotel industry is sometimes said to be reluctant to make full use of Information Technologies (Law & Jogaratnam 2005; Ratna et al. 2018). Often the challenges of the hotels, such as need for sustainability, connectivity

with customer, distribution and external threats (Stringam & Partlow 2016) might drive the hotels to invest more in technology and information systems.

In hospitality industry technologies are used to automate the business processes in order to achieve efficiency, serve as distribution channels for the products and services and enhance the guests' overall experience and increase customer satisfaction (DiPietro & Wang 2010; Stringam & Partlow 2016). Information systems can be designed also for example for energy management (Singh et al. 2018). For the hospitality sector “knowing your guest” is crucial (Pucciani & Murphy 2011) and as a response to that technology has given the opportunity to better understand the guests (Hertzfeld 2015a) and meet the customer expectations (Law & Jogaratnam 2005; Piccoli 2008). According to Pucciani and Murphy (2011) hotels gather data from customer relationship and loyalty programs, electronic point of sales, food and beverage outlets, websites and third-party websites. Data management is critical for customer activities, but also internal management. (Pucciani & Murphy 2011) It is also important to understand that the needed information systems are tied to the purpose as well as the ownership and chain type of the hotel. For example, budget hotels don’t necessarily need the same information systems and modules compared to resorts or business hotels and the information system architecture is connected with the ownership type of the hotel.

In hotels, many different systems or system modules are used in everyday business. Accroding to Bilgihan et al. (2011) hospitality industry IT can be categorized under back-office operations and front-office requirements. Back-office includes software solutions for inventory management, financial reporting, security management, human resources and data management. Front-office systems are mostly the point of sale and property management system (PMS). Ham et al. (2005) divide IT applications of the hotel operations into four categories including also the front-office and back-office applications but adding the restaurant and banquet management systems and guest-related interface applications for sales, food & beverage, electronic locking system and other activities. As an overall, the hotel information system landscape is broad as well as the entire industry and its processes and services.

Property Management System

Property management system (PMS) is one of the key systems in hotel industry. It is a set of application programs to manage front-office and back-office capabilities, including booking reservations, check-in and check-out, room assignment, room rates and billing. *(*Kasavana & Cahill 2003, cited in Pucciani & Murphy 2011*).* PMS is central data infrastructure that handles the administration of all of the guests, their profiles and bookings,

but also the revenues generated (Valorinta 2008; Puccini & Murphy 2011). Often hotel chains have one PMS solution, which means that all the hotels are in the same database. This means that the information is available across the chain and hotels can also make reservations for other hotels in the hotel chain. Franchise hotels and ownership hotels have usually own, private solution and the hotel is responsible for example about the pricing and availability on their own. (Valorinta 2008) According to Dr. Peter Agel (Leposa 2014) PMSs are developing towards integrated hotel IT solutions where the local administration is just one piece. Pucciani and Murphy (2011) recognize that PMSs have developed beyond the single process of check-in, reservation, check-out to a software that has multiple functions, integrating revenue management, linking loyalty programs, managing online distribution channels, performing inventory management and allocating human resources. Typical PMS solution includes the front desk PMS, but hotel PMS includes also a network of various hardware and software applications, such as sales & marketing, night audit, accounting, human resources management, security, housekeeping, and food & beverage. (Pucciani & Murphy 2011)

According to Hertzfeld (2015) 44 percent of respondents from large, full-service hotels use a PMS to manage functions or departments across their lodging property. Reasons to use PMS are to improve data accuracy and performance reporting, streamline operations and drive efficiency. 74 percent regard the integration to restaurant Point of Sale (POS) systems as important. (Hertzfeld 2015b) Puccini and Murphy (2011) found out that the bigger the hotel, the more PMS functionalities they have. The number of functionalities in PMS varied between 7 and 22 including for example check-in & out, guest billing, guest profile, housekeeping, security, room service, payroll, sales & marketing, financial control and night audit. (Pucciani & Murphy 2011)

There are many PMS providers available on the markets that provide various solutions with a large number of functionalities based on the changing needs of hotels (Puccini & Murphy 2011). Nowadays, many providers are aiming to provide a wide solution, not only PMS solution but a solution with many other characteristics or modules such as Enterprise Resource Planning (ERP) and food and beverage management. One of these systems, LS Central for Hotels, includes Property Management System, rate management and extensions for housekeeping, booking channels and in room management. It is also integrated to a Microsoft Dynamics 365 Business Central Enterprise Resource Planning system including all the functions from financials to human resource management. (LS Retail 2020) One of the most familiar information systems on the hotel industry is the OPERA solution, which includes many modules, such as PMS, Sales & Catering and API-interfaces, to choose from. The PMS includes for example front desk, reservations,

cashiering and housekeeping. (Rautiainen & Siiskonen 2015) These solutions are basically meant to unify and integrate all of the operations and systems in the organization which means that everything could be handled in one system or at least on the same platform. In this research we will focus on these wide Property management system solutions that provide different modules and functionalities for the hotels.

Other systems

Also, an Enterprise Resource Planning system is often needed in hotels since it automates and adds efficiency to repetitive business processes (DiPietro & Wang 2010; Vianna et al. 2014). The ERP systems can provide managers timely responses to the ongoing business operations and solve information fragmentation and disintegration problems (Vianna et al. 2014). ERP has an important role in enhancing service performance (Chauhan & Singh 2017). In addition, the opportunities offered by technology enables the organizations to invest for example in connectivity and engaging online customers. ERP offers a real time connectivity between different functions and complete integration of front, mid and back office. From the consumer perspective service quality, better customer experience, up-to-date information, effective and real time information and ease in the travel process have enhanced in organizations with an ERP system. (Chauhan & Singh 2017) Data integrity or reputation will become key questions regarding the organizations' strategic and operational aspects (Navío-Marco et al. 2018). It is important to note that ERPs can be integrated to the PMS solutions as earlier mentioned.

Other systems mentioned to be in use in hotels are Point of sales systems for Food & Beverage (Vianna et al. 2014), revenue management systems (Pucciani & Murphy 2011), global distribution systems (GDS) and central reservation systems (CRS) (DiPietro & Wang 2010). GDS and CRS make the hotel available in different distribution channels (DiPietro & Wang 2010). CRS manages the availability and price information of several individual hotels, distributes them further in the value chain and receives reservations. It serves as a chain-level sales service, where you can see the availability situation and make reservations. Additional information can be transmitted to external systems, such as PMS. (Valorinta 2008) GDS is a travel and tourism reservation system operating worldwide (Beaver 2012). In addition to these previous technologies, online distribution systems offer the available rooms on websites and online wholesalers, such as Hotels.com. (DiPietro & Wang 2010) Hotel's own websites and reservation systems are often integrated to PMS or CRS systems (Valorinta 2008).

The hotel information systems are wide range of different systems for distribution, sales, human resource management, booking, capacity management, restaurants and so on.

The information systems in use depend on the hotel and its offering. Though, as presented, the market of the systems is changing and the unified solutions of PMSs are getting more familiar and popular. Still these systems do not take care all of the functions, which is why it is important that systems can be integrated to also other existing systems, such as websites and online wholesalers. In this research we will focus on the unified PMS solutions.

3.5 Information system project lifecycle

In this chapter, we will introduce the process of information system sales and delivery from the point of view of the supplier organization. In the case organization the project lifecycle has three phases: sales, delivery and continuous services and these phases are introduced at a high level according to internal documentation (see Figure 15). The literature also recognizes these three phases, but the names might differ. In this research, we will focus on the first two phases of the project, which are sales and delivery. These two phases are the most crucial ones when starting new projects in new industry. We will also shortly introduce the third phase in this chapter.

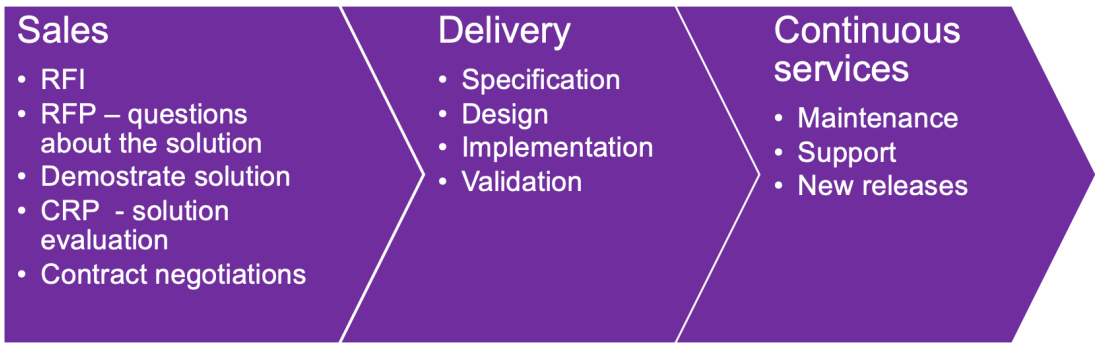

Figure 15: IT project lifecycle

According to the case company's internal documentation, the **sales** model of the case company starts with screening, which includes Request for Information (RFI) or Request for Proposal (RFP). After this the case company process continues with different steps, such as proposal preparing and negotiations and finally reaches the agreement. In the literature, the typical IT sales cycle starts also with request for information (RFI) from the buyer or their agents. The second step is that shorter list of vendors is requested to make request for proposal (RFP), which includes responds to detailed questions about the solution, implementation experience, and propose a cost and schedule for the project. Third step is to demonstrate the solution for the customer and in the fourth step the preferred solution is identified, and the vendor will be invited for a conference room pilot (CRP), which can last for several days and where the buyer can evaluate the application

in more specific. The fifth and final step is the contract negotiations and closing of the sales, where the size and composition of the deployment team from both the vendor and buyer side, dates and specifications for system modifications can be negotiated. (e.g. Verville & Halingten 2002, 2003; Wybo 2007) In sales the supplier is attempting to influence the buyer's perception of fit between its technology and buyer needs often by presenting the aspects of the technology that best fit the task (Wybo 2007). IT sales cycle is a process from which implementation context originates. This is why, there is a need to evaluate a product's functionality by key actors in the deployment process from both the vendor and the customer. The contract determines project structure, schedule, budget and the resources. (Wybo 2007)

The case company defines the second phase to be project **delivery**, which includes steps from signed agreement to completion and evaluation of the project. The planning, implementation and approval are part of this phase according to the internal documentation. According to Sommerville (2006) fundamental activities of software processes are specification, design, implementation, validation and evolution. The specification phase defines the requirements of the projects and the design is a description of the structure of the software. (Sommerville 2006) In the implementation phase, the selected information system is implemented into the organization which means taking the introduction of the new information system (Wenhong Luo & Strong 2004; Sommerville 2006; Parthasarathy & Sharma 2016). The information systems developed by the vendors are designed to standardize the business processes of the implementing organization and also bring best practices of the industry. Every organization though have their own way of doing business which leads to situation where the gap between the system and business processes is addressed by customizing the system or redesigning the existing business processes. (Wenhong Luo & Strong 2004; Parthasarathy & Sharma 2016) The validation phase is intended to show, often via testing, that the system conforms the customer. There are different process models for delivery, for example waterfall model, evolutionary development and component-based engineering that can be used in projects (Sommerville 2006). In the implementation, there are critical factors that effect on the success of the project. These critical factors are for example testing, change management, effective communication, project management and top management support (Fui-Hoon Nah et al. 2001). In this research, the final phase, evolution, can be seen as a separate part, which includes maintenance of the system.

The case organization uses the Information Technology Infrastructure Library (ITIL) as the model for the maintenance and support functions after the actual implementation and project. According to Agutter and Baker (2019) ITIL is considered best practice for IT

service management. It is a guidance about managing IT services and it supports organizations to deliver services that meet customers' needs, at a price the customer is willing to pay. (Agutter & Baker 2019) The phase after the implementation has many names, such as continuous services, evolution or post-implementation time. Maintenance and support have an important role in post-implementation time and often includes also vendor (Law et al. 2010). Vendors can offer technical support services, distribution of software patches, and also minor and major software releases (See Pui Ng et al. 2002). For customer, the expertise is often precious and a subscription to the maintenance and support program is therefore important (Law et al. 2010). At some point the current solution will reach its end and the vendor will often offer a new version of the system. This is often the point, when the process starts again from the sales cycle.

4. SUMMARY OF LITERATURE RESEARCH

This chapter will summarize the theoretical findings from the literature research in the previous Chapters 2 and 3. The goal of the theoretical research was to identify the current literature on the research topic, which can be utilized in the empirical part of the thesis. The objective of the study is to identify the required human capital in hotel information system project's sales and delivery phases and also identify the current human capital in the case company. Because of this, the theory frame covers the human capital and its management, hotel industry and information systems and also the introduction to project lifecycle process. The Figure 16 presents the overall theoretical framework for the empirical part.

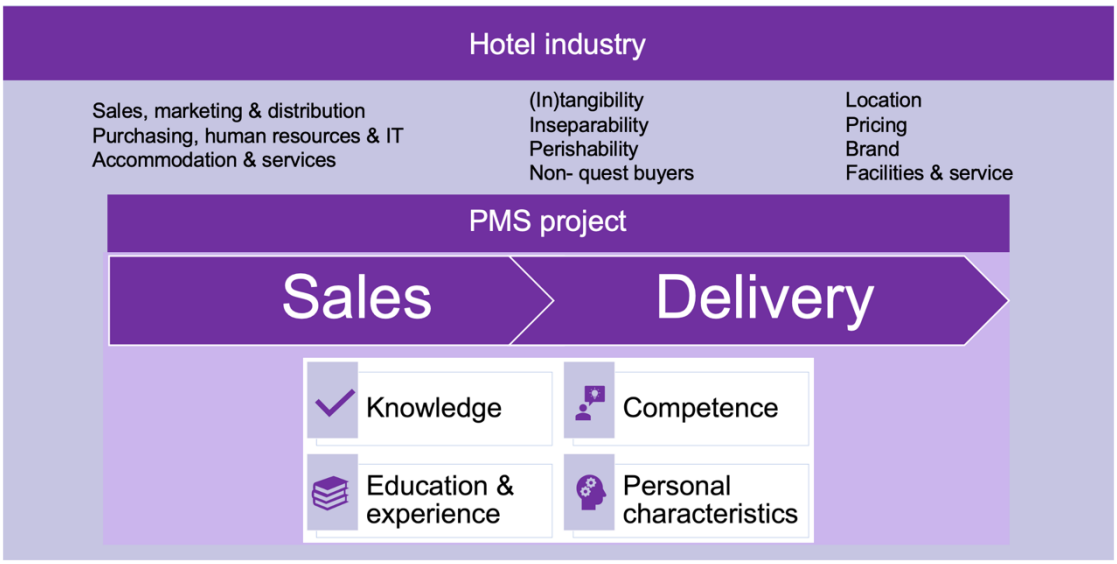

Figure 16: Overall theoretical framework for the research

In this research, the human capital definition has been approached from the perspective of the attributes of it since the human capital is studied on the individual and team level. As Carson et al. (2004) describes, there is no systematic attempt to list the attributes that constitute it. That's why the attributes are author's conclusion of the previous researches and might not be perfect. As a conclusion from different studies (eg. Edvinsson & Malone 1997; Lönnqvist et al. 2005; Roos et al. 2006; Ployhart & Moliterno 2011), the main attributes have been identified and defined to be knowledge, competence, experience & education and personal characteristics. The competence was also studied since it is often closely related to the definition of human capital. Competence is often defined to include profession specific competence, organizational competence, general working life

skills, values, standards & ethics and personal characteristics on the individual level (Bergenhenegouwen et al. 1997; Viitala 2005). Also, the human capital of the IT project team was studied and according to the literature, the human capital is divided into three categories: technical, business and humanistic. (Huang et al. 2009) Though, the research in this area was quite scarce, which is why the human capital in these researches was on quite general level. As the literature on all these three different areas studied show, there are partly overlapping attributes and characteristics, which is why the human capital studied in the empirical research is clarified in the Figure 17. It is also important to understand the fact that human capital is owned and possessed by the individuals, but the individuals offer the human capital for the team and organization by being part of it.

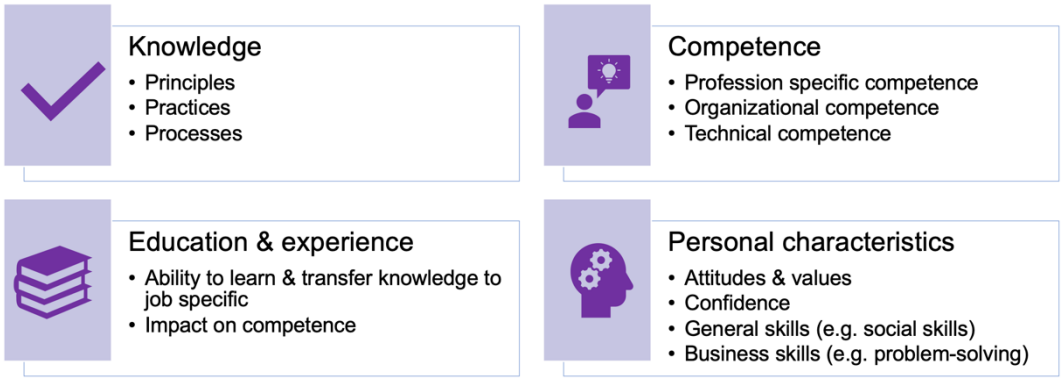

Figure 17: Human capital in the scope of this research

The human capital in this study is divided into four categories (see Figure 17), which is mostly based on the human capital definition. The main attributes of competence and IT consultant's human capital defined in the literature have mostly been included in the competence and personal characteristics categories. This framework can be used in the empirical research to study the required human capital.

The context in this research is focused on the hotel industry, hotel information systems and the information system project. The research is based on the hotel industry as an environment and the processes and functions typical to it. The literature about hotels emphasized the unique environment and characteristics of the hotels and also the hotel types that offer different services and products. Every hotel is different and has unique operating environment. (e.g. Langvinienė & Daunoravičiūtė 2015; Rautiainen & Siiskonen 2015; Stringam & Partlow 2016) The processes and functions are built to keep the customer in the center and to provide excellent service for them (Ratna et al. 2018). Distribution, reservations, accommodation, housekeeping and other services serve the customer the best possible way. Because of the unique environment, where hotels operate, various services and products the hotels offer, they need quite broad range of

information systems, information system functionalities and integrations to get the information flow all over the organization and support their functions. The key information system in hotels is Property Management System (PMS), which often takes care of the front-office and back-office capabilities. Though, the traditional PMS has improved to a system which includes a wide range of different capabilities and modules from room management and check-in to human resources and revenue management, which means that it often covers the main functionalities of a hotel. (Kasavana & Cahill 2003; Pucciani & Murphy 2011; Leposa 2014) It is also notable that the PMS was not easy to describe since the literature provided very different definitions and information about it. Also, the change from a narrow system to a wider solution revealed the literature to be often too old for this research.

The aspect that combines these two areas of research, human capital and hotel industry, is the information system project. The human capital is studied in the information system projects in hotel industry. Information system project lifecycle is a process including different phases of the project, which each have their own tasks and characteristics. Though, these phases varied a lot in literature by name and also by the meaning. In this research the empirical part will focus on the sales and delivery phases of the project.

Literature also emphasizes the need to understand and develop the human capital in the organization in order it to be successful. Organization should recognize the goals for human capital, existing human capital in the organization and the gap between these two to be able to benefit from the human capital in the organization. (Hyppänen 2013) The research objectives also require finding out what is the current state of human capital and how it can be measured. This requires human capital management and measurement. Measurement of human capital includes designing the measures, implementing them and using them as a part of organization's activities and processes. In more detailed level the designing consists of defining the need for measurement, issues to be measured, evaluator and also the ways to measure. (Lönnqvist et al. 2005) The management was approached from two perspectives: intellectual capital management and competence management. The human capital management in this research can be said to consist mostly of the competence management literature. The management includes recognizing the key human capital in the organization's teams, tasks and units according to strategy and vision. In addition, surveys completed on these levels should be compared to the key human capital and then development plans and actions derived from these. (Lönnqvist et al. 2005; Viitala 2005) This research will follow these processes to identify the required human capital and current state of it (see Figure 18). This research

will not cover the final step of this process, which focuses on the development plans and activities.

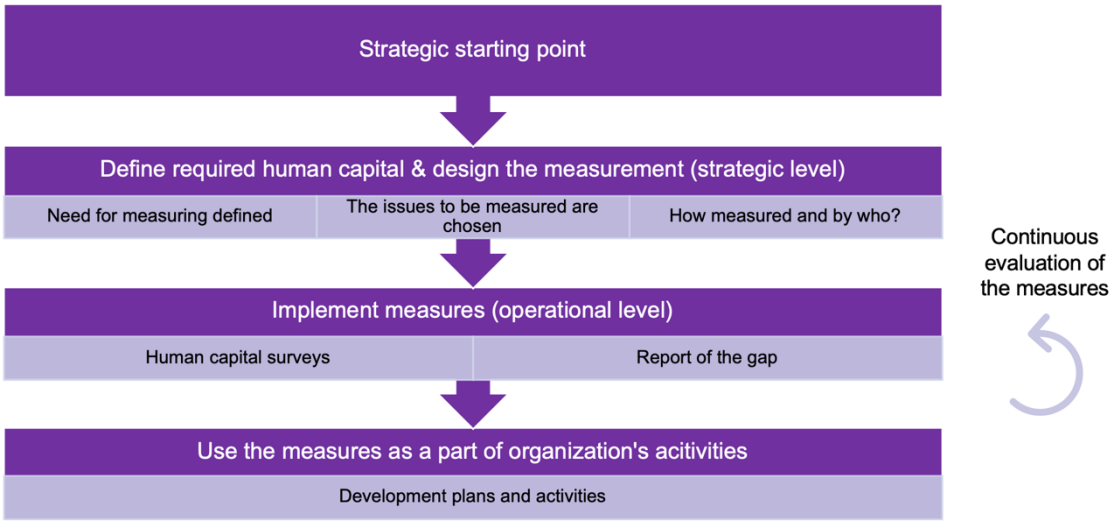

Figure 18: Process of human capital management and measurement (adapted from Lönnqvist et al. 2005; Viitala 2005)

The literature research clarified the definition of human capital, provided understanding of the hotel environment and the information systems as well as introduced the information system project lifecycle. Each of these areas were quite broadly studied in the research literature and provided a good base for this research. In addition, the literature research covered the management and measurement of the current human capital and defined a process to be followed in the empirical research. What was a bit surprising though, the human capital management is mostly studied only on strategic level, which focuses on organization wide issues and does not give answers for this research. To clarify the human capital measurement on the operational level that this research requires, the literature study combined intellectual, competence, performance and also some general measurement research.

The theoretical frame was not able to give answers each of the areas combined, such as the human capital in the hotel information system projects. Even if the literature research was able to clarify the attributes of human capital as presented earlier, it did not clarify what those attributes would be in this specific environment, hotel industry and information system projects. The research on the human capital of the supplier in information system projects was very scarce not to mention the supplier's human capital in hotel industry projects. This is the objective of this research, so this research gives a good opportunity to fulfill this research gap and provide new information for the case company and scientific research. Also, this research clarifies the measurement of human

capital in the operational level, which complements the research landscape in the area of human capital measurement.

5. RESEARCH DESIGN

5.1 Research methods

This chapter presents the research methods and how the research has been conducted including data collection methods and analysis. During the research possible customer organizations (hotel's employees), employees of the case organization and a hotel software vendor have been interviewed in order to reach the research objective.

5.1.1 Qualitative research

This research utilized a qualitative study to gather the data. According to Hirsjärvi and Hurme (2015) qualitative study aims to contextuality, interpretation and understanding the perspectives of the people involved in the research. Qualitative research studies the meanings and the relationships between participants and develops a conceptual framework and theoretical contribution (Saunders et al. 2016). Qualitative research involves many different research methods, and the choice of a suitable method must be based on the following criteria: efficiency, economy, accuracy and reliability. The most important is to choose methods that are suitable for solving the problem. (Hirsjärvi & Hurme 2015)

In this research, a qualitative, semi-structured interview was used. It is suitable for situations where the aim is to understand the respondents' attitudes, opinions and the reasons for the choices made. (Saunders et al. 2016) Some aspects of the interview have already been decided, but the interviews can be different according to the situation and the answers of the interviewee. (Saunders et al. 2016; Hirsjärvi & Hurme 2015) This means that questions and their order may vary from interview to interview. A semi-structured interview can be used to find out aspects that the interviewer would not have been able to ask or even think about. These interviews also provide the opportunity to probe answers, which means that interviewees can explain, or build on, their responses. (Saunders et al. 2016) This method was suitable for this research since it was important to also understand the reasons behind the answers and be able to deep-dive to the specific areas. One important reason to choose this method was also the fact that interviewees were able to bring up ideas that the interviewee has not even thought about, but which are important for research question and objectives. The interview situation is conversational, which is why the situation is recorded either by recording or by taking notes. (Saunders et al. 2016; Hirsjärvi & Hurme 2015) In this research, the interviews were recorded with Teams application.

The research utilized also a group interview as a qualitative method to study the topic. Semi-structured interviews may also be conducted on a group basis, where the interviewer asks questions to a group of participants (Saunders et al. 2016) According to Tashakkori and Teddlie (2003) multimethod approach is useful if it provides better opportunities to study the topic and if it makes conclusions more reliable. According to Saunders et al. (2016) group interviews may lead to a highly productive discussion, where many ideas and the key themes are easier to identify. On the other hand, there is also an opportunity for certain participants try to dominate the interview while others may feel inhibited. In this case, the group interview provided opportunity to get more ideas from the discussion and gain common understanding of the key themes. It was suitable for the situation, where the participants were co-workers and were able to build on each other's ideas.

In the situation, which the Covid-19 had caused, all the interviews were conducted over Microsoft Teams video application. This kind of interviews are called as electronic interviews (Saunders et al. 2016), which allow the interviewee and interviewer to stay in their familiar and safe locations (Hanna 2012, cited in Saunders et al. 2016). Teams application made it possible to conduct interview in real time and also conduct interviews abroad. Some of the interviewees used a camera in the interviews, but it was not mandatory. Teams gave a good opportunity to record the interviews and the possible video.

5.1.2 Sampling method

The interviewees were chosen with snowball sampling and purpose sampling methods. The snowball method is used, when it is difficult to find relevant interviewees. First, in the snowball sampling method, one interviewee or contact person is contacted, who will then again identify new interviewees. This goes on as long as the sample is large enough, or no interviewees will come up. (Saunders et al. 2016)

In the purpose sampling, the interviewees are chosen by the interviewer or researcher according to specific criteria, which enables to answer the research questions and to meet the objectives. Criteria for the purpose sampling can be for example as homo- or heterogenic sample as possible. (Saunders et al. 2016) In this case the critical case sampling was used. It selects critical cases on the basis that they are important and focuses understanding what is happening in each critical case so that logical generalizations can be made (Saunders et al. 2016).

In this research the snowball sampling method was mostly used in the first phase interviews, where the hotel industry employees were interviewed. Few interviewees were contacted via email, after finding suitable persons from the internet or with other suitable

methods. The contacted companies were selected before contacting them according to case company's preferences and in a way that they represent big portion of the Finnish hotel market. After this, the first interviewees were asked to provide other suitable interviewees. The persons inside the case company were selected according to purpose sampling to make sure that the persons that were chosen, have or should have the required human capital and could take part in similar projects or provide this human capital to others on the team. They could also have important information about the required human capital. One factor was also to choose interviewees with different tasks and roles to have an overall view of the team's human capital.

5.2 Interview process

The process of the empirical part is illustrated in the Figure 19. The process is based on the theoretical research, where the process of human capital management and measurement are recognized. The empirical research followed the measurement process from selection and grouping of issues to be measured to measuring the current human capital and improving the measurement tool. The strategic background for the research is the desire to enter the hotel information system market and the need to study the required human capital related to hotel industry projects. This objective was studied in both of the interview phases. In the second phase, the current human capital was also measured, and the importance of each human capital was defined. As an outcome from the interviews a human capital list was created and provided for the case company as well as the gaps of current and required human capital.

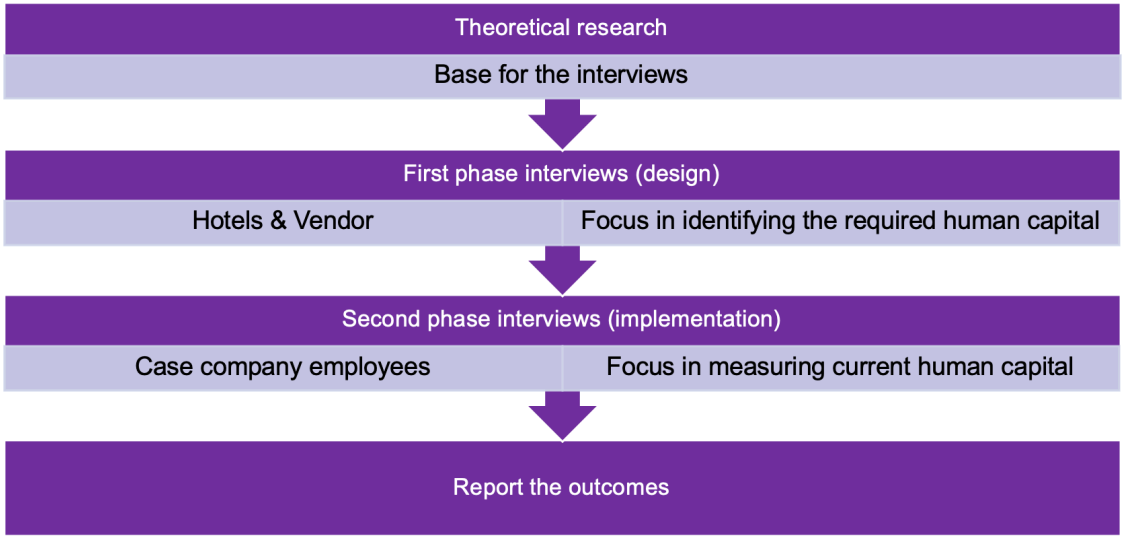

Figure 19: The process of the interviews in empirical research

The objective of the research is to understand the required human capital in hotel information system projects and the gap between the current and required capital. The objective was derived from the need to understand the company's current state and the possible investments needed if the company would execute the hotel industry projects. The objective of the measurement of the human capital was to learn and also gain more information for the case company. The idea was to create a list of human capital, which can be used for measuring them. This final list was done at a team level, since it is important to understand the human capital at the team level, which consists of individual human capital.

In the literature, the human capital is often defined from the strategy and vision of the organization. In this research the strategy and vision defined the scope of the human capital, which was the hotel industry and the projects in this specific team. It is a strategic decision to enter the hotel information system market. The human capital studied in this research, was not entirely familiar for the case company, since the industry is still new for them. Due to this, the human capital was derived first from the market by interviewing the possible customers and software vendor since they have the best knowledge, what the supplier should have. This human capital was then also compared to the literature. Since often, also the employees define the competences, the human capital was then presented to the case organization's employees, who defined the importance of human capital components and their own ratings in the human capital list. The customers and vendor were interviewed first to get an overview and base for the internal discussions. In this way it was possible to get a good overview of the human capital and define the final list of human capital in hotel information systems and the missing human capital in the organization. This information is provided for the organization for follow up actions and development plans.

5.2.1 Defining the required human capital – first phase interviews

The first phase interviews were conducted to possible customer organizations, which were four Finnish hotel chains and a Nordic hotel software vendor. The goal of these interviews was to recognize the required human capital of the supplier's project team in hotel information system projects and also recognize the processes and characteristics of hotel industry and hotel information systems to get a clear picture of the environment. The human capital was defined at a team and individual level since it became clear that everyone in the team does not have the same skills. The possible customer organizations were chosen as a target for the interviews on that base that they have the best knowledge of the industry and the work with the suppliers. The software vendor gave an

important perspective as a partner and as a vendor with some experience of the hotel information system projects. The case organization did not have experience from hotel industry and that's why was not able to define the required human capital from every perspective. The themes and questions in these interviews were based on the literature. For example, the human capital was divided into four categories recognized from the literature.

The interviews were conducted during one-month timespan. The interviewees received an email before the interviews with information about the objective, background and themes of the interview. They were also informed about the data protection and processing during the research (Appendix C). Interviewer organized also meetings with the interviewees if they asked before the interview to clarify the goal of the interview. The interview themes remained the same during the interviews, but the questions (Appendix A) varied and were stabilized towards the end. As often in thematic interviews, also in these, the interviewee asked clarifications and questions that were relevant for the situation. Every interview included also short introduction to the person, which included mostly short working history and the current position and responsibilities. Eight interviews were held in this phase of the research, seven of them to hotels and one group interview to vendor. The vendor interview was conducted as a group interview for two persons from the organization. This gave a good opportunity for the interviewees to discuss their opinions and ideas together. The group interview had a clear structure including questions available for the interviewees on a virtual board. They thought few minutes them by themselves and then introduced those ideas to others and discussed about them. The interviewees can be seen in the Table 2.

Table 2: Interviewees in the first phase

Number	Role	Organization
H1	Application Specialist	A
H2	IT-support	A
H3	Area Manager	A
H4	System and Application Manager	B
H5	Group IT Director	C
H6	Concept Manager	D
H7	Director of Revenue Management and Distribution	D
GI8	Senior Consultant & Business Developer (group interview)	E (vendor)

After the interviews were conducted, the information about these interviews was analyzed and the main themes of required human capital were recognized. A human capital list was created with an Excel. It consists of five categories and 27 components. These four categories are competence, knowledge, experience and personal characteristics,

which were identified in the literature. Though, all the identified themes and components of human capital in the interviews were not clearly under any of these specific areas. Especially knowledge and competence were hard to differentiate from each other by the interviewees. Same aspects were identified in both themes, which leads to a situation where the components were placed under the most suitable literature theme. If some theme was not suitable to any of these areas it was added to “other” category. This list is defined in more detail in Appendix D.

5.2.2 Measuring the human capital – second phase interviews

The second part of the interviews were conducted to case company’s employees and were based on the list created in the previous phase. The goal of these interviews was to identify the required human capital of the supplier in hotel information system projects, but also to find out the current human capital. Due to the time constraints of the research, the interviews have to both gain knowledge of the required human capital and pilot the measures at the same time. This goal gave the interviewees an opportunity to influence to the list of required human capital by stating importance for each component. They were also able to bring up any missing human capital, that was not covered in the list. Since these interviews were based on the previous interviews to hotel and vendor, it means that the themes were derived from there.

Since the hotel industry is a new industry for the organization, the evaluators are the employee’s themselves, instead of for example the supervisor. This gave the employees an opportunity to show their hidden human capital and competences. The interviewees gave a rating according to their human capital for each component, but also for the importance for every component in the list. These interviews were conducted as a semi-structured interview as well as all the other interviews during the research. It allowed the interviewees to give reasoning for their ideas and thoughts and the interviewee was allowed to ask clarifying questions. The interviewees are presented in Table 3 and the questions are presented in Appendix B.

Table 3: Interviewees in the second phase

Number	Role	Organization
H9	Consultant	F
H10	Project Manager	F
H11	Consultant / Software Architect	F
H12	Sales Manager	F

One important part of the planning phase of the second interviews, was designing the scale for the human capital and its importance. The scale for measurement was defined

according to the literature as a six-step scale, which included following criteria presented in Table 4.

Table 4: Scale for measuring human capital

Scale	Meaning
0	Not part of my job
1	Extremely low
2	Poor
3	Satisfactory
4	Good
5	Excellent

Previously presented scale was applicable to most of the components in the list. At some points interviewee was not able to answer the question according to the scale and in these cases, the human capital was measured some other way. The exceptions are mentioned in the analysis in more detail (Chapter 6).

The importance was measured according to the following scale in Table 5. The scale definition includes also the frequency of the need for the component in addition to the importance itself since it could be sometimes easier to evaluate the need by the interviewees. The rating of the importance emphasizes also the goal for the required human capital.

Table 5: Criteria for importance

Scale	Meaning
0	Not important / not needed
1	Slightly important / rarely needed
2	Important / sometimes needed
3	Very important / often needed

Every interview included also short introduction to the person, which included mostly short working history and the current position and responsibilities. These second phase interviews were conducted over two-week period. The interviewees received an email before the interviews with information about the goal, background and themes of the interview as in previous interviews. They were also informed about the data protection and processing during the research (Appendix C). The structure, themes and questions of the interview stayed the same in every interview, but as often in thematic interviews, also in these, the interviewee asked clarifications and additional questions if needed. The interviewer emphasized in the beginning of the interview that the list contributes the team human capital and that the list is not perfect since it only takes into account the hotel industry specific human capital.

5.2.3 Finishing the human capital list

After all of the interviews the final human capital list was created according to the preferences, comments and suggestions raised in the interviews. The list was then sent via email to the case company's employees, who took apart to the interviews and they had an opportunity to comment the final list and check and change their answers if needed. Only three changes were made in this phase, so the interviewees seem to be pleased on the list and the answers given earlier. The gaps between required and current human capital was recognized according to these answers.

It is important to mention that the list is not applicable as it is in all supplier organizations, since it does not take into account for example all technical competences required for the hotel information system projects. The presumption was that the supplier has a required level of technical competence and information system projects in overall.

5.3 Analysis

The analysis was conducted as a thematical analysis. The purpose of thematical analysis is to search for themes, or patterns, that occur across a data set. It involves a researcher coding her qualitative data to identify themes or patterns for further analysis, related to his or her research question. Thematic analysis offers a systematic and flexible approach to analyze qualitative data. It can be used to analyze large and small qualitative data sets and it will lead to rich descriptions, explanations and theorizing. (Braun & Clarke 2006)

Thematic analysis has the following phases: becoming familiar with the data, coding the data, searching for themes and recognizing relationships, refining themes and defining themes (Braun & Clarke 2006; Vaismoradi et al. 2013; Saunders et al. 2016). Braun and Clarke (2006) and Vaismoradi et al. (2013) mention also producing the report as a one phase.

Becoming familiar with the data

Researcher will become familiar with the data as they produce transcripts of the interviews or observations they conduct (Braun & Clarke 2006; Saunders et al. 2016). During the interviews only few notes were made and most of the transcripts were made after the interviews during one to two weeks timespan. The interviews were not transcribed as detailed as possible, which means that not every word was recorded, unless the answer appeared to be very well established. Otherwise the aim was to create as real picture as possible of the answers and interviews in as concise form as possible. Possible hesitations and uncertainties were included in the transcripts.

Coding the data according to the existing themes

Coding is used to categorize the data with similar meanings. It involves labelling units of data within a transcript with a code that symbolizes or summarizes the meaning. (Saunders et al. 2016) The themes for the analysis were partly derived from the literature, which is often very natural in deductive approach. Since the approach is abduction, it was also natural to derive the themes from the data. It was anticipated that the interviews would raise issues that could not be foreseen, so there was an opportunity to raise new themes. This type of data processing without forcing a particular frame is typical in inductive approach (Braun & Clarke 2006). Saunders et al. (2016) emphasize that the analysis of qualitative data includes both methods.

Searching for themes and recognizing relationships, refining themes and testing propositions

This stage of analysis involves searching for patterns and relationships in list of codes to create a short list of themes that relate to your research question. A theme is a broad category of several codes related to one another. Theme indicates an idea that is important to the research question. (Saunders et al. 2016)

The data was reviewed twice. First, the first phase interviews were coded, and the themes were recognized from the data. The human capital list was created according to the codes and themes found in the first phase. After this the second phase interviews were conducted and after them all of the data was again coded, and the themes were derived from the codes again. Since the themes were derived from the literature, the codes were already in the beginning suitable for some theme. If there was no suitable theme, new theme was derived from them.

The categories recognized in the literature regarding the human capital were competence, knowledge, experience & education and personal characteristics. The themes derived from the data were mostly part of some of the themes provided in the literature. The themes were hotel industry competence, technical competence, organizational competence, combined competence and experience, trend knowledge and specific personal characteristics. Few themes did not fit in the categories from literature and those were project management and the team as a whole. Regarding the hotel industry processes and functions hotel information systems the themes were mostly derived from the data to support the overall list of human capital.

6. RESULTS OF EMPIRICAL RESEARCH

6.1 First phase interviews

First, we will go through the first phase interviews which focus on hotel industry, hotel information systems and the supplier's human capital. These areas clarify the human capital of the supplier, the processes, characteristics and the environment of hotels. After that we will go through the second phase interviews with the focus on measuring the human capital components raised in the earlier interviews and ratings of this human capital.

The first phase interviewees brought up many issues and ideas regarding the hotel industry, hotel information systems and the supplier's human capital. As a result, there were some clear themes that were recognized in the interviews and those are presented next.

6.1.1 Hotel industry

Processes

The processes emphasized in the interviews were mostly focused on the customer service perspective and different internal processes that support the customer service processes. According to the interviewees most important process is the customer service process, which includes functions from distribution and reservation to the point that customer is leaving the hotel. The whole process or some parts of it were mentioned by many of the interviewees (H1, H2, H4, H5, H6, H7, GI8). It is seen as the most important process since the customer is crucial for the business. Also supporting processes, such as housekeeping and maintenance, are crucial for the accommodation service and an important part of the hotel's processes (H2, H3, H5, GI8).

"*The most important process is the customer service process, where we face the customer… Customer finds us from somewhere and makes the reservation… From this on starts the basic check-in procedures, smooth accommodation, check-out and aftercare…The process is very long." – Application Specialist (H1)*

The process from the reservation to the time that the customer leaves the hotel is long. This process starts from the distribution, sales and reservations, which is seen as an important part of the hotel functions (H1, H2, H3, H6, H7, GI8). It has been regarded important since otherwise the hotel would not get any reservations or customers would

have at least hard time finding the hotel (H1, H3, H6, H7). Hotels can choose the distribution channels and how much they will sell the capacity in every channel themselves.

"*The most important thing is that the hotel should be available in different booking channels. It depends on the hotel and hotel chain, how many reservations come from each channel and who provides the rooms for the customers…The distribution should work in a desired way." – Concept Manager (H6)*

In addition, other processes were mentioned among the previously presented ones. The most common of these is data and reporting (H3, H4, H7, GI8). It was seen that data gathering and reporting helps to understand the business, customer behavior and operations better and is crucial for hotels.

Characteristics and challenges

Often the characteristics and challenges mentioned in the interviews are similar or linked to each other in some way. The main characteristics of hotel industry and hotels can be divided into three main themes: hotel as a unique entity, customer centricity & service and brand & identity of the hotel. The challenges, on the other hand, are strongly related to the current situation while threats are in addition related to the characteristics and trends. The challenges can be divided into four main themes: Covid-19 and other pandemics & external threats, customers, digitalization and payments. In addition to these, many other characteristics and challenges were mentioned in the interviews, but only these main themes are presented next.

Hotel industry was regarded as a unique industry from everything else since it is a big entity, which does not include only the accommodation but also the restaurants, activities and other services provided in the hotels (H1, GI8). For example, the difference compared to for example retail industry was emphasized (H3, H4). This unique entity requires specific understanding of the multiple functions and their relations.

As said earlier, the customer is in the center of the business and that they have an important role in hotel business (H1, H2, H3, H4, H5, H6, H7, GI8). This means that understanding the customers, serve them better and provide services for different customers is crucial for the business in hotel industry. Hotels should be aware of different customer segments, their needs and customer behavior. Customers should receive experiences and good customer service so that the hotel can meet their expectations. The customer perspective was also seen as a challenge by some of the interviewees.

"*Focusing on the guest experiences. You aim at creating memories for the customer. There is no physical product." – Business Developer (GI8)*

"*How would you feel if you go to the hotel and they say that they cannot find your reservation? … Your customer experience in this point can be saved, but it will never be successful. You can reach a neutral level, but the customer won't leave the hotel with a smile.*" *- System and Application Manager (H4)*

One important characteristic according to the interviewees (H1, H4, H6, H7, GI8) is the need to create and show a unique brand and identity, personalize the service and bring it visible for the customers. The customer will always have a need to come to the hotel, but the specific hotel is selected by the customer preferences. This requires that the hotel creates a unique brand, personalizes their offering and creates experiences for their customers to stand out from the market.

"*Industry emphasizes that how you get the hotel's identity visible to customers, when the buying decision is very intuitive. If you are going to a specific location, then of course the location is the most important decision criteria. But then if you have many hotels with the same location, which one will you choose?" – Director of Revenue management and Distribution (H7*)

Due to the current situation with the Covid-19, the hotel industry has had a rough start for the year 2020. Covid-19 was often the first challenge mentioned in the interviews along with other possible pandemics in the future (H1, H2, H3, H5, H6, H7, GI8). It was also emphasized that Covid-19 will change the industry by increasing self-service and new ways to serve the customer safely (H5, H6, H7). Also, other external aspects, such as climate change and responsibility of the nature, were mentioned in the interviews as challenges (H1, H2, H3, H4).

Digitalization (H4, H6), automation (H1, H3, H4, H5, H7) and data utilization & information flows (H4, H6, H7, GI8) within the hotel were identified as challenges and also as an improvement issue. Hotels would like to utilize automation in processes to make them more efficient and support the decision-making and renew functions in the hotels. Information should be utilized and shared around the hotel functions, both of which would make the hotels more efficient and faster.

"*Covid-19 crisis has changed the whole industry. I claim that digitalization will increase also here, since this is a labor-oriented industry... People want different options to do things, like online check-in and -out, take care of payments, use mobile key to access the room and all the information will be in their smart phone. I believe that this will improve during the next few years." - Group IT Director (H5)*

The payments were mentioned as a big challenge for the hotels and their business (H1, H5, H6, GI8). Often, there can be a person, who takes care of the reservation, a person

who stays at the hotel and a person who pays the bill, which makes three stakeholders for one reservation. In addition, the payments have changed a lot during the few years and created new challenges for the hotels.

6.1.2 Hotel information systems

The Property Management Systems (PMS) were as an overall described as large and complex systems, which have a lot of interfaces and integrations to other systems. They are often critical for the business, take care of the capacity of the hotels and are the heart of the hotel, where the information flows. The current systems have pros and cons, which are related to the current supplier, system architecture and of course the system itself.

The pros of the systems mentioned in interviews are mostly related to the facts that are developed during time. First, the hotel organization is familiar with the current system, they know how it works and they can use it efficiently (H1, H2, H3, H5, H6). Second, the current supplier is large and global, which leads to the situation that often new staff can use the system without training or only with some training since they are already familiar with the system (H1, H5, H6). A supplier that is large and global is also reliable in terms of support and development of the system and has many references around the world. And finally, the system has the features that are needed in the organizations (H1, H4, H5, H7, GI8).

"*Well, if you think about our current system, it is in a way a robust. It has taken a lot of time and development resources, it works, and it has a lot of features. And probably, since the system is often taught at school, many who come to work, know how to use it to some extent." – Group IT Director (H5)*

"*Currently, I would say that since we have used it for so long, we know, what it does. We know how to utilize it and control it in a way that it serves us, and we don't serve it. We have learnt this the hard way. Currently, I would say it is very good." – Application Specialist (H1)*

The cons instead, are related to the facts that the systems have bad usability, they do not support the organization's processes or integrations. The bad usability seems to be a problem in the current systems (H3, H4, H6, H7, GI8). They are old and outdated, not intuitive at all and the users basically need to know exactly, what they are doing. The second con are the integrations and interfaces, which are often difficult and time consuming to implement and have high cost (H3, H4, H7, GI8). Third con is related to the system capabilities. The interviewees felt that the system does not support all of the processes well enough or is not flexible regarding the organization's needs (H3, H4, H5, H6, H7).

"*The system does not take the customer processes into account anymore." – Area Manager (H3)*

"*Let' say that the current system does take care of its responsibilities, but it could be easier… It works, but the adaptability, content and future are not in that condition that it would be easy and simple. And this is the gap if the system supports us or not." – System and Application Manager (H4)*

6.1.3 Human capital

One objective of the interviews was to identify the human capital in sales and delivery phases. As an overall conclusion, it can be said that the human capital in sales and delivery phases differ from each other. Often human capital was defined as more general knowledge and competence in sales phase and more refined in delivery phase. This also means that the human capital is more customer organization specific in the delivery phase.

The interviews also covered the human capital of the customer in very general level in order to define if there is something that the customer is missing, and the supplier should especially have, or the supplier does not need, and the customer has. The analysis shows that often the customer's human capital is focused on the understanding of their organization and processes (H1, H2, H4, H5, H6, H7), development issues (H1, H2, H3, H5, H6) and other organization specific issues, which were not expected from the supplier in such detailed level. On the contrary, the customer can often miss system or technical competence (H1, H2, H3, H4), which can be offered by the supplier.

"*Supplier should not use too much time to understand, how the customer organization works since, in my opinion, it is a waste of project resources. It is not effective use of time if the supplier tries to understand, how we have done things for many years. More important is to find out the essential issues." – Group IT Director (H5)*

6.1.4 Competence

The competence is divided into four themes: hotel industry competence, technical and system competence, customer organizational competence and other competences. These are the themes identified from the interviews.

Hotel industry competence

Hotel industry competence was regarded amongst the most crucial aspects of supplier's human capital and many of the interviewees recognized this to be one of the essential ones in hotel information system projects. The hotel industry theme includes different components of competence derived from the interviews and these are divided into hotel

industry as an overall (H1, H2, H3, H4, H5, H6, H7, GI8), hotel processes (H1, H3, H4, H5, H6, H7, GI8), hotel's operating environment (H1, H2, H4, H6, H7, GI8) and challenges and needs of hotels (H1, H2, H3, H4, H7, GI8).

The hotel industry competence focuses on the hotel industry, its policies, functions, practices and products in general. Among other things, the hotel is a large entity with a variety of activities, customer focus, customer segments, brand and visibility as discussed in the Subchapter 6.1.1. It is crucial to understand these characteristics and what is their effect on business and operations. It would be ideal to have the same level of competence and understanding in sales and delivery phases (H3, H4).

Hotel process competence emphasizes the need to know and understand the business and customer service processes presented in Subchapter 6.1.1. The processes, such as customer service, housekeeping and distribution processes are very crucial as well as the links between different processes. The competence is more general in sales phase but goes to deeper level in the delivery phase and is also often refined to customer specific (H1, H3, H4).

"*You should understand the processes and realize, where the money comes from and where it goes. For example, flexible distribution channel management is more important than the possibility for a wake-up alarm. You should understand, what is important and what is prioritized." – Area Manager (H3)*

The operating environment refers to the location, market and hotel itself as an environment. The understanding of the effect of the location and competitors (H1, H4, H7, GI8) as well as the unique environment of the hotel and its key product (accommodation) and services and products supporting it (restaurant etc.) is necessary according to the interviewees (H4, H6, H7).

"*The hotel's operating environment is complex and kind of a combination of many industries." – System and Application Manager (H4)*

Competence on the challenges and needs of the hotels is fundamental according to interviewees. What are the challenges and needs in the industry in general? The understanding of the challenges mentioned in Subchapter 6.1.1, such as Covid-19, payments and digitalization creates better understanding of what the customer is looking for and what they want to have. Also, this competence should be refined during the project to a customer specific.

"*In this industry, you must understand the business. If you do not, the door will be shown for you. There are a lot of industry specific things, how things should be done and how*

the systems work. If you don't understand them, you will not receive any trust from the client." – Group IT Director (H5)

Technical and system competence

In this research the technical competence is kept on a general level. This means that the research assumes that the supplier has sufficient capabilities in programming and other technical aspects. The interviewees though identified few components that are related to technical and system competence: competence of the hotel system that the supplier is delivering (H1, H2, H3, H4, H5, H6, H7, GI8), competence of the current technical environment in hotels (H2, H3, H6, H7, GI8) and competence of integrations & interfaces (H2, H5, H6, H7).

According to interviews, supplier should know their product, how does it work, what it can do and what it cannot do. The system should be understood on technical and functional levels. In general, the interviewees thought that the competence is more general level competence in the sales phase, but it was emphasized that the salesperson should also know the product from a technical perspective or that they should at least have someone to ask for help. The competence will though refine as the project progresses.

"*Supplier should know the system so well that they are able to tell from every perspective what are the benefits of the functionalities." – Director of Revenue Management and Distribution (H7)*

The current technical environment in hotels includes the information systems and architectures. Since the technical environments in hotels are quite complex including multiple systems with many integrations and dependencies, the supplier should be able to have some basic view of the existing architectures and operating environment and to be able to plant the new system to the current architecture.

"*It is important to be able to tell how the system works in the current environment, what should be removed, how it is implemented and what needs to be integrated." – Application Specialist (H1)*

The integrations and interfaces were seen as a great challenge by the interviewees in terms of cost, amount and difficulty, which is why competence The supplier should know the basics of which integrations should be done and where as well as understand the integrations often done in hotels already in the sales phase (H6, H7). In the delivery phase the competence should be more refined to the specific customer's integrations and interfaces.

Customer organizational competence

Organizational competence refers to that what the project team should know about the customer. The answers regarding, what the specific competence is, were varying, but as an overall the information was seen as an important and useful for the supplier in sales and delivery. The organizational competence can be divided into two components: customer organizational competence (H1, H2, H3, H5, H6, H7, GI8) and customer organization and its operating environment (H1, H2, H3, H4, H7, GI8).

The customer organization competence includes basic information about the company in sales phase, such as what kind of organization it is, where it operates and how does the product compare to others on the market. There was some variation on the things that the supplier should know based on the interviews. However, it was noted that too detailed information will not be beneficial (H1, H5, H7). The more knowledge in sales, the better, since it helps to avoid misunderstandings.

"*It is important to understand on a certain depth. History might not be that important, but it can bring a relaxed atmosphere if a customer notices that the supplier knows them. It is essential to know the customer's procedures, models and product" – Group IT Director (H5)*

This theme focuses on understanding and prioritizing the current practices, challenges, needs and processes of the specific organization and it was kept significant for the supplier. The earlier the customer's challenges and, for example, system architecture is mapped, the better. Sometimes it is good to have a deeper understanding of certain needs already at the sales stage in order to define the scope of the project. Though, several aspects will be specified as the project goes further. This component on the list was identified in different parts of the interviews and added to this theme in order to highlight the importance of focusing on the specific customer instead of the overall industry.

Other competence

The other competence is divided into two components: combined industry & system competence (H1, H2, H3, H4, H5, H6, H7, GI8) and understanding & solving the big picture (H1, H2, H3, H5). This theme emphasizes the fact that understanding one aspect, for example the industry, is not enough, instead there should be competence from many areas, fields or individuals combined.

Combining an understanding of the hotel industry, its processes and needs with the system competence is crucial in order to create solutions for the customer and it was highly emphasized in the interviews. There should be an understanding of what is solved and

how. In the sales phase, higher-level competence is sufficient, such as the knowledge of the problems being solved (H1, H5). In the delivery phase, these problems and challenges are investigated in more detailed level.

"*Understanding of the hotel processes and how the system works with those processes and how this is done in action." – Group IT Director (H5)*

The big picture understanding refers to the understanding and solving the entity and its various components. Basically, not only looking at the system or some of the components but instead looking at the entity including the system and its environment and how to find the best solution from that perspective. For example, the entity of different processes instead looking at only one process (H5).

"*In addition to understanding the industry and its processes, it is crucial to solve the entity and to give options on how to solve it" – Area Manager (H3)*

6.1.5 Experience and education

Experience was seen as one of the most crucial aspects of the supplier's capital. On the contrary, specific education was not kept that crucial (H1, H2, H4, H5, H6, H7, GI8). The education was regarded more as an additional aspect to human capital and it is not required from the supplier's project team members.

Experience of the team and its individuals was one of the most often recurring component and it is divided into two: individual's experience from the hotel industry through previous work experience (H1, H2, H3, H4, H5, H6, H7, GI8) and experience of similar projects in the industry (H1, H2, H5, H6, H7, GI8).

The project team individuals experience of hotel industry was believed to improve the competence of the hotel industry, customer and the priorities, such as functional priorities. It is important in sales and delivery phases, but especially in sales phase it creates value if the supplier is able to show their competence and experience for the customer. Though, at this point it was also often emphasized that not everyone in the team will need the experience of hotel industry (H1, H2, H3, H4, H5, H6, H7, GI8), but it is crucial that at least few people have it and they are able to translate the customers ideas to the rest of the team and have some surface for contact with the customer. It was also emphasized that the experience can be not only from hotel industry but also from travel agencies or similar organizations can create better understanding of hotel industry (H5, H7, GI8).

"*Everyone does not need to have the experience. Of course, it is enough that some have it. Everyone has their own strengths and areas of competence, where they are better.*

What is important for sure is that the team must have sufficient competence in all the necessary areas and fields to complete the project reliably." – Concept Manager (H6)

The experience of similar projects in the industry helps the supplier team to understand the system and its functionalities in real life even better according to interviewees. It also creates trust and credibility to the supplier if they have done similar projects before. The experience should be not only in the delivery phase but also in the sales phase since the supplier should know what they can promise to the customer. Some of the interviewees (H4, H5, GI8) think that the experience of especially hotel information system projects is not crucial, instead something similar is enough. Most of the interviewees thought that specifically previous hotel industry projects would be crucial experience (H1, H2, H3, H6, H7).

6.1.6 Knowledge

One of the often-mentioned themes in the interviews were the trends now and in the future. The trends can be divided into hotel industry trends (H1, H3, H5, H6, H7, GI8) and common trends in business and digitalization (H1, H5, H6, H7, GI8).

The hotel industry trends allow to understand what is happening in the industry, what is trending and what is developed at the moment and possibly in the future. Some of the trends were already discussed earlier in the Subchapter 6.1.1 and these were for example automation and digitalization. The common trends were emphasized to allow the supplier to see the big picture and general trends in business through different industries. How things work in other industries and in bigger picture?

"*The knowledge is not limited to hotel industry. It can be easier to bring some new perspective outside from an industry you know. How elsewhere is operated and what could be suitable for this industry as well?" – Concept Manager (H6)*

6.1.7 Personal characteristics

The personal characteristics mentioned in the interviews varied a lot and many different characteristics were mentioned. Though, some themes can be driven from them and these are presented below. Mostly all of the components were mentioned to be crucial in sales and delivery, but they might have different meaning in those phases. In these cases, the meaning has been clarified below.

1. Communication, cooperation, and common goal (H1, H2, H3, H4, H5, H6, H7, GI8)

   The interaction, cooperation and listening skills were repeatedly emphasized in the interviews as an important characteristic to a project team member. Ability to

work together and listen to the customer is a crucial factor for the project and its success. Common goal and long-term partnership were also regarded as important for the cooperation (H3, H4, H6, GI8). In the delivery phase, supplier is often a part of customer's team and the cooperation is closer than in sales.

2. Proactivity and activity (H1, H2, H3, H4, H5, H7)

   Project team members should be active and proactive in their communication especially in sales (H4, H5) and proactive in delivery by challenging the customer and solving issues on frequent pace (H1, H2, H3, H4, H5, H7).

3. Openness (H1, H3, H6, H7, GI8)

4. Reliability and trust (H1, H2, H3, H4, H5, H6, H7, GI8)

   Supplier should stick to agreements and do what is agreed. Especially in the sales phase, too much should not be promised (H3, H7).

5. Honesty (H1, H4, H6, H7, GI8)

   Honesty and realism about what can and cannot be done.

6. Confidence and courage (H1, H4, H5, H7)

   Confidence and courage to say one's own opinion and to admit if one does not know how to do something. In the sales phase, individuals should have confidence and in delivery stage the courage to give their own perspective on things.

7. Customer orientation, helpfulness and service (H2, H3, H5, H6, H7)

   Ability to discuss almost any issue and to help the customer.

8. Interest, motivation and attitude (H3, H4, H6, H7, GI8)

   Interest and motivation towards the project, learn and carry out the change for the benefit of the customer. In the sales phase, in particular, a genuine interest in the project and an attitude that emphasizes the importance of the project (H3, H7).

9. Creativity, problem-solving and ability to give examples and ideas (H1, H3, H5, H6, H7)

   Ability to give examples and ideas as well as models from existing solutions based on previous experience and knowledge. At the same time, look critically if processes could be done differently. Especially at the delivery phase, examples, ideas and ability apply different environments is crucial (H3). In the sales phase, these may still be at a fairly general level.

"*One of the things in every project is being realistic about the process and approach. Consultant going in there, who do not have that much experience about hotels, should ask more questions, be honest if they don't understand. Open minded and willing to learn but also humble and honest to say maybe I do not get this because I have not worked with this." – Senior Consultant (GI8)*

6.1.8 Other

One component, which was emphasized in the interviews and doesn't belong straight to any category presented earlier is project management and systematicity (H1, H2, H4, H5, H6, H7, GI8).

The project management and systematicity refer to the need for project manager (H1, H2, H4, H5, H6, GI8) and the systematicity of the individuals in the team (H3, H4, H6). These are more important in the delivery phase, where it is necessary to determine who is responsible for what and keep in the schedule. The clear leader and structure for the project seemed to be an important capability for the supplier.

What was also emphasized a lot in the interviews was the team as a whole (H1, H2, H3, H5, H6). The supplier's project team should have enough human capital from all of the areas needed in the project, for example finance, hotel industry, supply chain and so on. Each competence is not required from everyone in the team, instead the team competence is more essential as well as the different personas in the team. This component is not precicely a human capital required in the projects, instead it tells something about the characteristics of the human capital and is important note for the research.

6.2 Second phase interviews

Next, we will go through the second phase interview results, what the interviewees said about the components and their importance. All interviewees were mostly satisfied to the human capital list and its different themes and components. Inside the themes though, were found some improvement needs for the list. Some of the components were seen very similar or overlapping. The final list of the ratings can be found in Appendix E, together with the list that was gone though in the interviews.

6.2.1 Competence

The competence consisted of four areas on the list: hotel industry competence, technical and system competence, customer organizational competence and other competences.

Hotel industry competence

Interviewees rated the hotel industry competence 2,8/3, which highlights the fact that it is crucial competence in the projects. The average ratings are presented in the Table 6.

Table 6: Importance of hotel industry competence

Code	Hotel industry competence	Avg.
A1	Hotel industry	3
A2	Hotel processes	2,8
A3	Hotel's operating environment	2,5
A4	Challenges and needs	3
Average		2,8

The hotel industry competence was seen specifically crucial in the sales phase (H9, H11, H12), where the procedures, business and terminology should be known. The system cannot be sold, if the salesperson and the team does not know anything about the industry (H9, H11, H12). The interviewees thought that the industry competence is the starting point for showing the customer that the supplier knows, what they are doing.

Hotel process competence was also seen as an important to have by each interviewee. According to interviewees (H9, H10, H11, H12), in the sales phase the processes should be known on a general level, such as what processes there are in hotels and how they work. In the delivery phase the team should dive into the processes in more depth and go through them on a detailed level with the customer (H9, H10, H12). One crucial thing to understand about the processes is the customer centricity, which affects to almost everything else in hotel (H9, H12).

Hotel's operating environment got the lowest average rating 2,5/3 of the hotel industry competences and one of the reasons was considered to be the quite similar environments within Finland (H12). Interviewees emphasized that this kind of competence is often crucial in the sales (H9, H10, H11, H12), where the customer's operating environment and hotel segment should be known (H9, H12).

"*In the sales phase the segment of the hotel should be identified e.g. is the hotel a city hotel located in the city centrum or a spa hotel in Sotkamo, as the latter is completely different from a city centrum hotel in Helsinki.*" – *Consultant (H9)*

Challenges and needs of the hotels were highlighted due the current situation, where the Covid-19 has created new challenges for the industry (H9, H10), such as check-in, breakfast, regulations, customer segments and products during the pandemic. The challenges and the industry reflect the current situation, in which the supplier should be able

to provide answers and solutions relevant for the situation and customer (H9, H10, H11, H12).

One interviewee (H11) brought up that the restaurant and activities could be mentioned somehow in the list. Another interviewee (H10) thought instead that these are natural part of hotel industry and in that sense are already included in the previously presented components. One interviewee (H10) also thought that the current information systems and competitors' products should be familiar for the supplier to be able to know the differences and tell why this specific product should be the customer's choice. Otherwise, each interviewee thought that the hotel industry competence included everything needed and that anything would be hard to take off from the list.

Technical and system competence

Competence of the hotel system, the current technical environment in hotels and integrations and interfaces were rated as 2,5/3 on average (see Table 7). As an overall, the two latter components were seen a bit overlapping with each other (H10) and that the entity is a bit challenging since this does not include the basic technical skills, such as programming, configuration and setting the parameters needed (H10, H11). The interviewees still believed that the ones mentioned are the necessary ones regarding the specialties in the hotel industry (H9, H10, H11, H12). One interviewee (H11) also suggested that different process competence (finance, sales etc.) could have been added as a subcategory. Though there was no clear idea, which processes should be included and how important they are in hotel industry.

Table 7: Importance of technical and system competence

Code	Technical and system competence	Avg.
A5	**The deliverable information system**	3
A6	**Current technical environments in hotels (architectures)**	2,3
A7	**Integrations, interfaces and competence in these areas**	2,3
Average		**2,5**

The hotel system competence was considered very important 3/3 by each interviewee. Supplier should have this competence to be able to provide the system for customer (H9, H10, H12). If the supplier does not have this competence, it is almost impossible to implement the customer's processes in the system and provide the expertise that the customer is looking for (H10). Also, the in the sales, discussion about the system, the key areas and functionalities of it is an important skill (H12).

"*The customer does not know our system, so we must have the competence and ability to say, how some of the key processes function in the system." – Project Manager (H10)*

The current technical environment in hotels generally was assumed to be good to understand (H9, H10, H11, H12), but also not so important since the architectures in organizations can be quite different and can be learnt (H9). One (H11) interviewee felt that knowing the architectures in general in all industries helps to understand the architectures in hotel industry. The architecture was considered to be good to know in a general level in sales (H11, H12), such as understanding the traditional system architectures in hotel industry (H12) or the customer's preliminary architecture (H11). In delivery instead, there should be good overall understanding of the architectures (H11).

"*In sales it is good to understand [the current environment], since the traditional systems are basically a large amount of systems integrated into each other. The salesperson should understand on a general level, how the unified solution, which serves multiple areas without spiderweb architecture, brings improvements." – Sales Manager (H12)*

The interviewees noted that integrations and interfaces are a crucial part of the project especially since the hotel industry has many integrations to other systems and they are an essential part of the business (H9, H10, H12). If the supplier has standard interfaces or interfaces that are easy to implement, it is already a huge advantage in the sales phase (H10, H12). Also, if the supplier knows the basic integrations in the hotel industry, it helps the process of implementing the interfaces (H10, H11). Still the competence of the current integrations in hotel industry was not regarded as mandatory by some of the interviewees, since the integrations were regarded quite similar across industries (H9, H11). In conclusion it can be said, that the interfaces and integrations divided the opinions in a sense that, what kind of competence the supplier should have about them. It was agreed that they are important and the understanding why they are important is essential as well as the competence of the integrations in general. The competence of the current integrations and interfaces in hotel industry though divided the opinions.

There should be some sort of general understanding of the architecture and integrations already in the sales phase (H9, H11), where the integrations have to be listed and a first draft of the architecture should be created. In the delivery phase, those integrations are discovered in detail and also finally implemented (H9, H11).

Customer organizational competence

The two components of organizational competence are customer organizational competence and understanding the customer & its operating environment. The average importance is shown in Table 8.

Table 8: Importance of customer organizational competence

Code	Customer organizational competence	Avg.
A8	**Customer organization**	2,4
A9	**Customer organization and its operating environment**	2,5
Average		**2,4**

The customer organization competence was not kept that important 2,4/3 compared to other themes. The interviewees believed that in the sales phase this information leans mostly on the public sources, such as Google and is quite general level understanding of the business, which though was regarded at the same time very essential competence to have (H9, H10, H12). The customer organization is under further research in delivery and also in sales phases. To be able to deliver the system, it is crucial to know the customer (H9, H10, H11). Few interviewees (H10, H11) also claim that it is often important for the customer to recognize that the supplier knows them.

"*In a way, this [customer organization competence] is studied, when we move forward in the project, but of course you have to do the background research. I have noticed that often suppliers don't bother to find out even the basic things from Google, which feels disrespectful for the customer. Especially in the sales phase, there is no room for mistakes." – Consultant/Software architect (H10)*

The second component was kept slightly more crucial than the customer organization competence. It is important to understand, what the customer wants, what is important to them and what are the challenges (H9, H10, H12). Also, this information will be studied during the project, but the faster it can be identified, the easier and better it is to bring the solutions and ideas to the customer (H9).

As an overall, interviewees thought that everything cannot be known in the sales phase and that the competence goes in deeper level during the project. The customer organization competence was assumed to be more important in sales phase and understanding the customer and its operating environment in delivery phase. One interviewee (H10) also pointed out that knowing the customer's project culture and preferred project model is important information in sales phase.

Other competence

The other competence is divided into two components as earlier presented: combined industry and system competence & understanding of the big picture and it was rated as 3/3 in overall (see Table 9).

Table 9: Importance of other competence

Code	Other competence	Avg.
A10	**Industry and system competence combined**	3
A11	**Big picture understanding and solving**	3
Average		**3**

The hotel industry and system competence together were regarded as very important by each interviewee. It is the unique selling point that the supplier should be able to utilize. The interviewees also agreed on that competence is on quite general level in sales and deeper in delivery phase. According to one interviewee (H12) supplier should also know in the sales phase the global solutions and be able to tell why our system is better.

"*The ability to offer solutions for problems that the customer does not even know they have.*" – *Consultant (H9)*

The understanding of a big picture was also argued to be crucial. Organizations are often large and there are many stakeholders inside the organization, which should be taken into account (H12). Though, this component was seen as overlapping to the previous components, such as current operating environment and integration (H10). One interviewee (H11) emphasized in both of these components that the competence is not needed from everyone in the team, for example finance consultant does not necessarily need to understand the big picture.

6.2.2 Experience and education

Experience presented got 2,3/3 rating, which is not so high compared to the other ratings given. As previously presented, experience is divided into individual's experience from the hotel industry through previous work or similar and experience of similar projects in the industry. The importance emphasized in the interviews is presented in Table 10.

Table 10: Importance of experience

Code	Experience	
B12	**Experience of the hotel industry**	2
B13	**Experience of similar projects**	2,5
Average		**2,3**

The experience from hotel industry through work divided the interviewees' opinions. Some thought that it is not crucial almost at all (H11) and some thought that it is crucial in order to understand the industry better (H9, H10, H12). The answers varied from "slightly important" to "very important". It was also emphasized that not everyone in the project team, such as project manager or developers need the experience (H9, H10,

H12). Instead at least one person should be able to tell about the industry and share the knowledge with others and this person could be for example a consultant. Interviewees were bit reserved towards the experience, but they thought that experience could help to understand the customer even better. In addition, it is something that the customers value. One interviewee (H9) also suggested that similar work experience, such as experience from hospitality or travelling industries would also be beneficial.

"*The best solution would be that someone, who has worked in a hotel or understands the [hotel] industry, tells us, how it works." – Sales Manager (H12)*

The experience of similar projects in the industry were found crucial mostly in the sales phase, where the experience helps to convince the customer (H9, H10, H12). Especially the ability to speak the same language with the customer and have previous experience of the similar projects to understand them better, is important (H9, H10, H12). As in the previous component, also in this some assumed that there should be at least one person who knows the industry or has some similar experience from hotel or hospitality projects.

The education was not mentioned in the preliminary list since it was not emphasized in the first stage interviews. The education was still brought up in these second stage interviews. Few interviewees (H9, H12) thought that there could be some ways, such as courses, to study the industry. But as in first stage interviews also in these, the experience remained as the main focus. One interviewee (H12) said that the projects themselves are often the best way to learn about the customer, their processes, worries and development issues.

6.2.3 Knowledge

The knowledge was divided into hotel industry trends and common trends in business. In addition, the most important trends, digitalization & technology and process automatization, mentioned by the first stage interviewees were added as additional components on the list to emphasize the importance of these aspects. The trends mentioned during these interviews were for example remote working, pricing automatization and utilizing data. The average ratings for the trends are presented in Table 11.

Table 11: Importance of knowledge

Code	Knowledge	
C14	**Common trends in business**	2,5
C15	**Hotel industry trends**	2,8
C16	***Digitalization & technologies***	3
C17	***Process automation***	2,5
Average		**2,8**

Both, hotel industry trends and common trends were seen as quite important. One interviewee (H11) mentioned that this information would be more crucial in the sales and after the delivery, since during the delivery the scope cannot be changed much. This knowledge was also regarded as quite general level knowledge of trends (H9, H12). One interviewee (H10) also asked to clarify the meaning of an overall trend to more specific.

Knowledge of digitalization and technologies was considered as very important 3/3. Digitalization takes supplier and the customer forward and it is something that the supplier should be good at. Process automatization was considered as dependent on the customer as well as the project and its rating varied between 1-3. Some interviewees (H10, H12) thought that this is very important especially in the hotel industry and some (H11) claimed that this is not often so essential in this kind of information projects.

The latter two components were kept a bit overlapping and proposed to either be combined or otherwise reorganized. It was also observed (H10) that maybe knowledge could also include modern and agile ways to work.

6.2.4 Personal characteristics

The personal characteristics were regarded as crucial ones for almost everyone in the project team, though they were also regarded as general skills important to any industry. The average rating for all of them is 2,9/3 (see Table 12). The interviewees did not want to add anything to the existing list, but they thought that some of the components could be combined since they were a bit overlapping.

Table 12: Importance of personal characteristics

Code	Personal characteristics	
C18	**Cooperation, interaction, communication, listening and common goal**	2,8
C19	**Proactivity & activity**	3
C20	**Openness**	3
C21	**Reliability & trust**	3
C22	**Honesty**	3
C23	**Confidence & courage**	2,8
C24	**Customer orientation, helpfulness & service**	3
C25	**Interest, motivation & attitude**	3
C26	**Creativity, problem-solving & ability to give examples and ideas**	2,8
Average		**2,9**

1. Cooperation, interaction, communication, listening and common goal

Everything in the project starts with good communication and cooperation. All of the interviewees emphasized the importance of this characteristic. One interviewee (H11) also reminded that the importance depends on the role. Technical consultant might not need that great communication skills, but in general everyone should be able to work with anyone.

2. Proactivity and activity

   This was also regarded partly as a part of communication, since the communication should be active and proactive (H10, H12). Proactivity was defined to refer especially to the fact that supplier should be able to propose and change customers way to do things (H12).

3. Openness

   Interviewees thought that openness, reliability, trust and honesty have at least partly the same meaning and strong connection to each other (H10, H11, H12). Openness and honesty are highly appreciated by customers and openness can be a way to earn the trust (H10, H11).

4. Reliability and trust
5. Honesty
6. Confidence and courage

   Confidence to say one's own opinion and also if one does not know how to do something was considered essential (H9, H11). In the sales, courage, toughness and activity is needed to sell for large scale customers (H12).

7. Customer orientation, helpfulness and service
8. Interest, motivation and attitude

   Employees must have the tools (company should invest in the industry) to have the motivation, interest and attitude towards the work (H12).

9. Creativity, problem-solving and ability to give examples and ideas

6.2.5 Other

Project management and systematicity got high rating 3/3, which highlights the fact that these cannot be underestimated and that those are typical and important elements in projects (see Table 13).

Table 13: Importance of other human capital

Code	Others	
D27	**Project management & systematic individuals**	3
	Competence of the team as a whole	3
Average		**3**

The project management was kept more important than the systematic individuals, since it was emphasized that consultants can be more creative in their nature and project manager takes care of the project as a whole.

"There must be someone, who says what is must-have and what is nice-to-have if everything cannot be done. Otherwise the project will be never ready." – Consultant (H9)

The second component is the project team competence as a whole, which was also regarded as an important component 3/3 by each interviewee. The team should have different personalities and individuals with different strengths in order to succeed (H9, H10). This component was mostly just a mention in the list emphasizing the team's human capital.

6.2.6 Open questions

The second phase interviews included also few open questions before going through the human capital list and these results are presented next.

Human capital in hotel information system projects

All interviewees emphasized the importance of the hotel industry competence. Understanding of things like terminology, trends and processes would be important for supplier. Also, understanding of the system and what it is made for is crucial (H9, H10, H12).

"*We should have comprehensive understanding of the hotel industry, its trends, how it is different compared to retail, what is the competition like, what kind of competitors do we have and how they differ from us. Finally, to what kind of needs the system should give solutions to?" – Project Manager (H10)*

Hotel industry characteristics

The characteristics focused mainly on speed and smoothness of processes and services (H9, H10, H12), dynamic industry, where pricing and capacity changes all the time (H9, H10, H12) and business travelers and tourists thought of as different customers (H9, H10, H12). One interviewee (H11) also emphasized the broader experience and competence, which is needed in hotel industry projects.

The current state of human capital

In general, interviewees felt that the current human capital in the organization is not enough to start hotel industry projects and deeper hotel industry competence would be needed (H9, H10, H11, H12). For example, a person whose primary competence is on the hotel industry should be hired. Few interviewees (H9, H10) said that a consultant with a hotel industry knowledge or experience would be a good way to improve competence, one option would be a hire an expert to sales (H10) or a hotel industry expert outside IT industry (H9, H11). Supplier could also work together with the vendor (H12).

6.2.7 Measurement results

The results of the current human capital were gathered during the interview, but after the human capital list was refined, the interviewees were able to check and change their answers if needed. Finally, only three component's rating was changed in this step. One importance rating and two human capital ratings were changed. Next, the final results are presented according to the final structure of the list. The final list, which has been refined according to the interviews can be found in Appendix E.

Hotel industry

The hotel industry competence was measured as 2,9/5 on average, which is not very high, and it seems that in this area the organization has a gap in competence since the importance of the hotel industry is 2,8/3 on average. As we can see on Table 14, one to two persons have a bit better rating on each area, but as an overall the competence in the case company cannot be said to be on a high level.

Table 14: Results for hotel industry competence

Code	Hotel industry competence	H9	H10	H11	H12	Avg.
A1	**Hotel industry**	4	4	1	2	2,8
A2	**Hotel processes**	4	4	2	3	3,3
A3	**Hotel's operating environment**	3	4	2	3	3
A4	**Challenges and needs**	3	4	2	2	2,8
Average		**3,5**	**4**	**1,8**	**2,5**	**2,9**

There is small variation between the components, and it seems like the best competence is in the hotel processes. On the contrary, especially hotel industry and challenges & needs would require more competence. One interviewee (H12) felt that they would need more competence on this area to be able to work in these projects and another interviewee (H9) felt that all of the competence one has might not be up to date anymore even if one feels to have good competence. Company could have one to two persons

more with excellent competence in these areas and preferably at least one of these should be a consultant.

Technical and system competence

As an average the technical and system competence was rated as 2,6/5, which is quite low rating especially compared to the importance 2,6/3. The ratings are presented in Table 15.

Table 15: Results for technical and system competence

Code	Technical and system competence	H9	H10	H11	H12	Avg.
A5	**The deliverable information system**	2	1	4	3	2,5
A6	**Technical environment in hotels**	2	4	3	2	2,8
Average		**2**	**2,5**	**4**	**2,5**	**2,6**

The deliverable information system competence varies from 1-4. Some interviewees felt (H11) that they have quite good base to learn the new system, but others were not so sure about that since the system can basically be also something very different that they are used to.

The technical environment including the architectures and integrations were familiar for few interviewees (H10, H11), even if H11 did not have specific understanding about the hotel industry architectures and integrations. As an overall, others (H9, H12) felt that they have sufficient competence on those so that they can talk about them. Of course, also in this theme it was emphasized that not everyone should have the higher-level competence on these, but currently it seems that this competence is lacking from the relevant persons, technical employees and consultants.

Customer organizational competence

In this competence area, the interviewees were not able to measure their competence on some specific customer. Instead they focused to give a rating based on their ability to find out and learn this information. They were able to use their current competence and experiences as a reference from other projects. As an overall this competence seems to be already on good level in the organization and no big gaps in competence can be found here. The average competence is 4/5 and there are no big differences between the interviewees as we can see in Table 16.

Table 16: Results for customer organizational competence

Code	Customer organizational competence	H9	H10	H11	H12	Avg.
A7	Customer organization	4	4	4	4	4
A8	Customer organization's decision making and practices	4	3	5	4	4
Average		4	3,5	4,5	4	4

Interviewees felt that they are capable to learn and find out the needed things about the customers. One interviewee (H9) said that the ability to listen to the customer at this point is very important in order to see the pain points of the customer, but they should also be ready to ask the right questions from the customer in order to find the information needed. Another interviewee (H11) emphasized that the ability to understand the customer's requirements is one's strength. In general interviewees felt that there is always room for improvement.

Combined competence

Combined competence got rating 3,1/5 on average as presented in Table 17. The industry and system competence combined got rating 3/5, which was basically based on the fact that the interviewees have not seen or used the current system yet in detail. They believed that they would still learn it quickly since it is based on the system they have used before. One of the interviewees (H10) has some sort of understanding of the hotel PMS systems in general and other interviewee has some basic understanding of the modules and functionalities in those systems (H12), which affected their ratings in this case.

Table 17: Results for combined competence

Code	Combined competence	H9	H10	H11	H12	Avg.
A9	Industry and system competence combined	3	4	2	3	3
A10	Big picture	3	4	3	3	3,3
Average		3	4	2,5	3	3,1

Understanding of the big picture instead was rated as 3,3/5, which is not too high either compared to the importance 3/3 of the competence. One interviewee (H11) felt that since one does not know the system that well, it is also harder to understand the bigger picture in this case.

In both of these components, there is a clear competence gap in the case organization. The employees would need education about the system and also the hotel industry to improve their competence in this area.

Experience

The experience of the hotel industry was 2,8/5 and the experience of similar projects 3,3/5. These ratings reflect satisfactory competence on these areas on average since the importance was rated as 2,3/3, which is relatively low compared to other components. Though, as we can see in Table 18, two persons have most of the experience (H9, H10). These two persons have worked in hotel industry and they have also taken a part in an information system project during that time. Though, the case organization has few persons with experience in this area, it was also emphasized that especially consultants would need the experience. Only one consultant has the experience according to interviews and this is why a human capital gap can be identified here.

Table 18: Results for experience

Code	Experience	H9	H10	H11	H12	Avg.
B11	**Experience of the hotel industry**	4	5	0	2	2,8
B12	**Experience of similar projects**	4	5	3	1	3,3
Average		**4**	**5**	**1,5**	**1,5**	**3**

Knowledge

Regarding the trends, interviewees gave on average 2,9/5 rating about their knowledge (see Table 19). This human capital could be a lot higher in the organization since the importance was high 2,8/3 on average.

Table 19: Results for knowledge

Code	Knowledge - Trends	H9	H10	H11	H12	Avg.
C13	**Common trends in business**	4	3	3	3	3,3
C14	**Hotel industry trends**	3	4	1	2	2,5
C15	***Digitalization & technologies***	3	3	4	2	3
Average		**3,3**	**3,3**	**2,7**	**2,3**	**2,9**

The lowest rating got the hotel industry trends 2,5/5 and it seems that this knowledge is still on quite low level in the company. Though, there is some variation between interviewees in the answers they gave. According to the interviews, H10 has the highest knowledge on hotel industry trends 4/5 and H11 has the highest knowledge on digitalization and technologies 4/5. Still, it cannot be said that the current knowledge would be enough in the organization and the case company should focus especially on developing the hotel industry trend knowledge.

Personal characteristics

The personal characteristics are on a good level 4,3/5 on average. The lowest rating is for the interest, motivation and attitude, but also that one got rating 4/5 on average. As an overall it can be said that the personal characteristics might need only some fine adjustments since the importance was rated to be 2,9/3. Still, no clear gap on human capital can be found in this category. Each interviewee has also quite the same answers, so nobody stands out from the ratings, as we can see in Table 20.

Table 20: Results for personal characteristics

Code	Personal characteristics	H9	H10	H11	H12	Avg.
C16	**Communication, cooperation & common goal**	4	5	4	4	4,3
C17	**Proactivity & activity**	4	5	4	4	4,3
C18	**Openness, trust & honesty**	4	5	5	4	4,5
C19	**Confidence & courage**	4	4	5	4	4,3
C20	**Customer orientation, helpfulness & service**	4	5	4	4	4,3
C21	**Interest, motivation & attitude**	4	4	4	4	4
C22	**Creativity, problem-solving & ability to give examples and ideas**	5	4	5	3	4,3
Average		**4,1**	**4,6**	**4,4**	**3,9**	**4,3**

Others

The final components of the list have been added as a notion to the final list. They are not actually human capital of any person in the team, instead they are requirements for the team as a whole. These two components are project management and team as a whole. If the case organization always has a project manager in the team and many different persons with different human capital, there is no gap in these components. These components were not rated since these are not specific to any individual.

7. DISCUSSION

7.1 The required human capital in hotel information system projects

The main research question in this study focused on the required human capital in hotel information system projects and was phrased as following:

What human capital does the hotel industry information system sales and delivery require from the supplier's team (and its individuals)?

The human capital recognized in the empirical research was eventually divided into four categories: competence, experience, knowledge and personal characteristics. These are the categories recognized also in the literature research (presented in Figure 17). This fact emphasizes that the definition in the literature covers all the aspects of human capital since the empirical research was not able to identify any new categories to it. The final list of human capital can be found in Appendix E, which concludes the findings of the study.

The Figure 20 presents the simplified overall picture of the similarities and differences between the literature and the empirical research. The colors illustrate if each component is found in the literature, in empirical research or in both. As we can conclude from the Figure, this research provides answers to the supplier's human capital in hotel information system projects, which had very scarce previous literature. Since it is not so straightforward to show the outcome in one picture, each of these areas is further explained after the Figure.

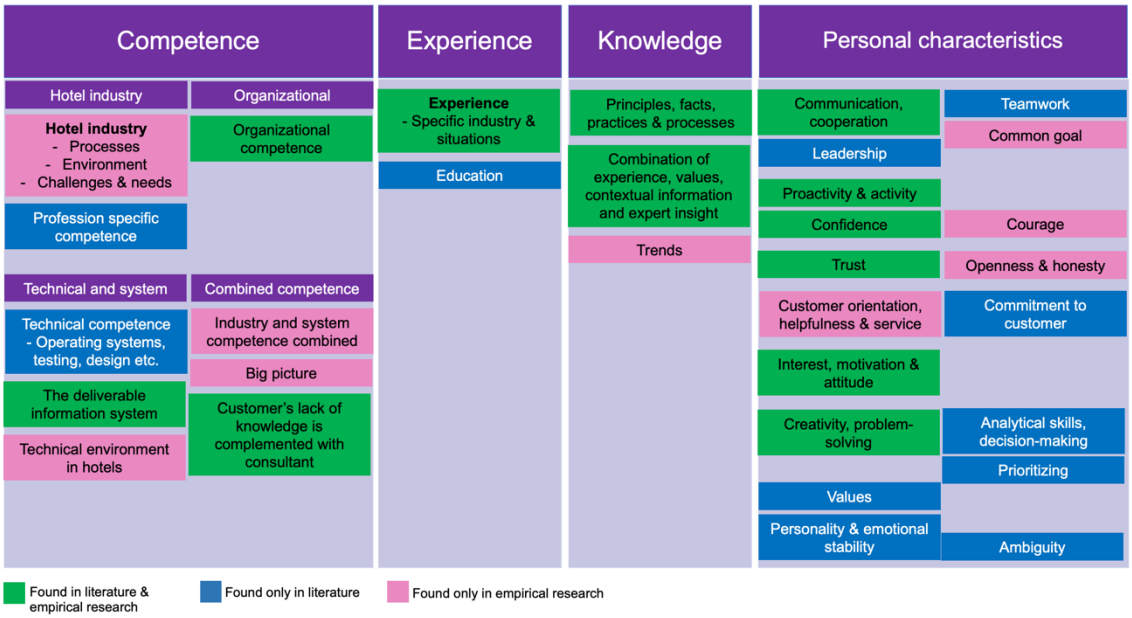

Figure 20: The comparison between the literature and the empirical research

The first category, **competence**, was divided into themes according to the empirical research. The first theme **hotel industry competence** was emphasized since knowing the processes, industry, operating environment and challenges & needs is crucial for the supplier. The interviewees argued that supplier should know for example policies, functions, terminology, processes, environment and challenges as well as the impact of each of them in order to understand the industry and be able to provide the right expertise for the customers. Competence in these areas was regarded important in sales but it refined to customer specific during the sales and delivery.

In the literature, competence is defined to be the way of putting into practice some knowledge in a specific context (Abel et al. 2008). This knowledge in this case is for example the industry, process and environment knowledge, which is then used in this specific context. This kind of competence was not straightforwardly described in the literature, even if it clearly comforts the definition of competence. One reason for this could be that this competence is highly characteristic for this particular industry. One way to find the linkage between hotel industry competence and literature could be to regard it as a professional-specific competence (Bergenehenegouwen et al. 1997; Viitala 2005) since it is required especially in hotel industry projects and is the core of professional competence. The difference between the literature and the empirical research might be consequence of the general level that the literature keeps studying as well as the challenge of the researcher to be able to categorize the components to the right category. This theme could also be seen as a part of knowledge, where from the knowledge is

refined to competence. Though, even if this theme does not have clear linkage to competence literature, it has clear linkage to the hotel industry literature, where the hotel industry was seen as unique industry compared to other industries (Langvinienė & Daunoravičiūtė 2015; Stringam & Partlow 2016). For example, customer centricity (Ratna et al. 2018), different hotel categories (Medlik 2000; Rautiainen & Siiskonen 2015) and processes (e.g. Rautiainen & Siiskonen 2015) make it a unique environment. This fact was also emphasized in the interviews, which is why the hotel industry competence was also regarded as important competence for the supplier's team.

The second theme of competence according to the empirical research is **the technical and system competence,** which requires that the supplier knows the technical and functional levels of their product and understands the current technical environments in hotels since it is important to be able to plant the system in the current architecture. Knowing the current architecture helps the supplier to determine the integrations and architectures. The technical competence was emphasized also in the literature by Dezdar and Sulaiman (2009), Huang et al. (2009) and Colomo-Palacios (2013). The technical competence includes skills of different operating systems (Huang et al. 2009), testing, design and software requirements, but the level of competence depends also on the role (Colomo-Palacios et al. 2013). The technical and system competence in this research could be kept also as a professional-specific competence, which is often learnt through education (Bergenhenegouwen et al. 1997; Viitala 2005) since it is an important part of the work the supplier does and crucial for the individuals in the project team. The literature and this research have clear link regarding the technical competence. This research still differs from the literature a bit by emphasizing also the understanding of the technical environments in hotels. This fact after all emphasizes the need to understand the specific industry environment. This difference could be explained by the general nature of the previous studies and specific context of this study. According to the literature, hotel industry has many systems that need to work together (Ham et al. 2005), which might clarify the nature of the hotel information system environment and the need to understand it.

According to the interviews, the third theme is **the customer organizational competence**, which focuses on knowing the customer as early phase as possible, such as the type of the organization and their products and what the business is like. Also, the practices, challenges, needs and processes of the specific customer were emphasized especially in the delivery phase. Organizational competence was also recognized in the literature. According to Viitala (2005) this kind of competence is dependent on certain task and employer. Competence, such as knowledge of the organization's business idea,

networks and products, is created through experience but it can be supported with communication and orientation. (Viitala 2005) Also, the interviewees emphasized that the customer organizational competence is learned during the project, which strengthens the linkage between literature and empirical research.

Finally, the fourth theme of competence, **combined competence,** means combining the system and industry competence to understand what is solved and how, and also the ability to actually create those solutions. It was identified in the empirical research that the competence of only some of them is not enough. The supplier should have individuals who have this kind of combined competence. Combined competence is crucial especially in the delivery phase, but the supplier should already know in the sales phase what is being solved. The big picture competence refers to the need to solve the entity of the system, environment and its components. This kind of competence is very valuable for the customer since the system is only one part of their business operations. The combined competence is not straightforwardly possible to link to literature, but some links can still be made. According to Laughlin (1999) lack of knowledge, experience or competence is complemented with consultant, who has the missing capital. In this case this combined competence could be this kind of competence for the customer. Another aspect that supports this component, is that experience of specific industries and competence of modules will make an industry expert better to determine what should work well in this specific customer organization (Piturro 1999). In this matter, it can be said that this combined competence is very characteristic specifically to this research and its context, which could be the reason why it has not been emphasized in the literature.

The second category, **experience**, was divided into two components according to empirical research. These components are experience of the hotel industry and experience of similar projects. These both were emphasized in sales and delivery phases as a crucial factor to understand the customer, hotel industry and priorities better and knowing what can be achieved during the project. Experience creates also trust and credibility. The **education** instead was not really appreciated in this study. The interviews emphasized that education does not guarantee any specific competence or knowledge that would be crucial in this context.

According to the literature, education and experience are things that impact the competence and knowledge on specific areas (Lönnqvist et al. 2005; Abel et al. 2008; Ployhart & Moliterno 2011). Experience reflects an opportunity to learn and transfer knowledge from generic to specific (Ployhart & Moliterno 2011). Piturro (1999) also argued that the consultant's experience in specific industries, might make them better to determine, what will work best for the given company. In this case, experience from hotel industry and

information system projects means that the team members will probably have more knowledge and competence about hotel industry and similar information system projects and will be able to use it in the hotel industry projects. This was noticed in the measurement of current human capital that the persons with experience from hotel industry had also higher hotel industry competence. The experience itself is not valuable but when it has an effect to the knowledge and competence, it creates value for the supplier and the customer. The difference between this study and the literature is the education. This research did not emphasize education at all, but the literature has kept it as an important part of human capital. This could be explained by the fact that interviewees regarded the experience more important than education or that they were not able to think of any specific education that could be valuable in these projects. Even though, this does not mean that education would not be important at all.

The third category, **knowledge**, is divided into three trends according to the empirical research: common trends, hotel industry and digitalization & technology trends. The knowledge of trends was kept important since it generates general knowledge that can be utilized in hotel industry projects to create better outcomes. Especially the knowledge of other industries could bring new ideas to the customer and to the project and in that way improve the system, but most importantly also the customer's business after the implementation. Ployhart and Moliterno (2011) defined knowledge as understanding of principles, facts and processes which range from generic to specific. Davenport and Prusak (1998) defined it to be a combination of experience, values, contextual information and expert insight. The trends include exactly this kind of information, facts, processes and expert insight, even if the trend knowledge was not directly mentioned in the literature as was no other knowledge either. Though, from the literature point of view the knowledge category is quite scant in this study and could include also many other aspects. One reason for this could be that many things were included to the competence category that could have been included also in this category since these categories are partly overlapping.

The fourth category, **personal characteristics** was divided into seven components according to the interviews. Personal characteristics are focused on communication, activity, openness, confidence, customer orientation, motivation, creativity and problem solving. These components were seen as very important part of the team member's human capital and are presented in more detail in Appendix E. These characteristics affect to the first impression especially in sales phase, where supplier should be able to show their interest, openness, active communication and try to find out as much as possible about the customer.

According to the literature research personal characteristics include attitudes, confidence, general skills, such as social skills and business skills, e.g. problem-solving. The literature research regarding the supplier's human capital information system projects highlighted especially the communication skills (Djavanshir & Agresti 2007; Huang et al. 2009; Rivera-Ibarra et al. 2010; Banai & Tulimieri 2013), which includes also listening and proactivity (Djavanshir & Agresti 2007; Huang et al. 2009) since it is a way to avoid potential pitfalls, disappointments, and frustrations and provide services that guarantee customer satisfaction throughout the cycle of customer engagement (Djavanshir & Agresti 2007). Communication was often also the first thing mentioned in the empirical research. Other characteristics mentioned in the literature were problem-solving, creativity and analytical skills (Huang et al. 2009; Gorman 2011; Banai & Tulimieri 2013). The literature research also brought up many other characteristics, such as attitudes, motivation, trust (Lönnqvist et al. 2005), social skills and confidence (Bergenhenegouwen et al. 1997; Viitala 2005), which were also highlighted in the empirical research. The area of personal characteristics is very broad, but there is an apparent link between the literature and this research regarding them since almost each personal characteristic brought up in the empirical research was also identified in the literature.

As additional remarks, two important components were added to "*other"* category, which does not actually represent any actual part of human capital but were recognized in the empirical research. This category emphasizes some important issues that were highlighted in the interviews. These components are project management and team as a whole. According to Edvinsson & Malone (1997) and Ployhart & Moliterno (2011) the team's or organization's human capital is more than the sum of individuals' competences, knowledge and skills. This means that the entity is bigger than the individual's human capital. This was also verified by the empirical research since the interviewees emphasized the importance of individuals in the team and the meaning of this. Another thing emphasized in this research was the project management, which means that someone takes care that the project proceeds on time and on schedule and this is often the responsibility of the project manager, which was not studied in the literature research.

After comparing the previous literature and the results of the empirical research regarding the main research question, it can be said that they have similarities but also differences. As already clarified earlier, previous research recognized the attributes of human capital and some themes inside these categories, such as technical competence, organizational competence and specific personal characteristics like communication and activity (e.g. Viitala 2005; Huang et al. 2009; Banai & Tulimieri 2013), which are typical for

information system supplier's employees. These themes were also identified in the empirical research. Though, the previous literature has stayed on quite general level in the supplier's human capital studies. It has not studied human capital in specific context much, especially in hotel industry and was not able to clarify the information system project specific human capital in detailed level enough. The previous research of human capital does not take account much the supplier, hotel industry, information systems or these all combined, which means that the research gap exists in the supplier's human capital in hotel information system projects.

This research was able to build on this base that the previous literature created by defining the human capital and its attributes and themes and took it even further in order to answer the research question. It can be said that this research provides a wider portion of different themes of human capital that the previous literature was able to provide inside the four attributes. These themes identified in the empirical research are for example hotel industry competence, trend knowledge, combined competence and from the personal characteristics openness and honesty. The research also identified the components inside these themes and to go on very detail level there. For example, the hotel industry competence is divided into industry, processes, environment and challenges & needs and each of them is also further explained. This research is able to create an overall picture of the human capital of the team and also applies this to very detailed level, which means that the list can be used to identify the current and missing human capital in two phases of the project, sales and delivery in very concrete level. This is new information for the whole research area and also for the case company and therefore very crucial.

7.2 Human capital measurement and the identified gap between the required and the current human capital

How can the current state of human capital be measured?

The measurement of the current state of human capital was investigated in the literature research and the measurement in the empirical research was done mostly according to it. In the literature research three perspectives were combined to create an overall approach to measurement: measurement in general, intellectual, competence and performance measurement, since these together were enough to define the theoretical background for human capital measurement. The research focused on the first two phases of measuring identified in the literature (Lönnqvist et al. 2005): designing the measures and implementing them. The final phase, using the measures was left for the case company to execute.

Designing the measures included defining the purpose of measuring, how the measures are selected and finally the selection of the measures (Lönnqvist et al. 2005; Viitala 2005). In this case, the purpose of the measurement was to learn and get information about the current human capital of the company and these objectives were straightforwardly derived from the options the literature gave (Uusi-Rauva 1996). Choosing, how the measures should be defined was one of the difficult decisions since it would have been easy to just derive the first version from the strategy and then refine it with employees' ideas as in the literature was suggested (Viitala 2005). In this case though, there was no specific strategy where the human capital could have been derived from. Instead, the human capital was identified by hotel industry employees who had experience about working with a supplier and knew what the expectations from the market are. Then this human capital was refined by the case company's employees. The researcher found that the human capital list could be a good tool to structure the required human capital and execute the measurement since it provided a structure for doing it. This list was identified in the literature as a tool to classify and identify competences (Viitala 2005).

Also, the evaluator and the scales had to be decided. Choosing the person to do the measurement was quite straightforward since the person themself would be the best to bring up human capital, which nobody else knew this person would have (Cheung 1999). This was specifically important in this case where the employees did not currently use all of this human capital in their everyday work. It was also important to define the scales for importance and human capital measurement since it was decided that the easiest way to compare the components, is to use a scale. Defining the scales to be used in measurement was a difficult challenge since they had to be suitable for each component of human capital list and still be very clear and easy to understand. This is why the scales presented in the literature (e.g. Hyppänen 2013) were not used in this research as is.

Implementing the measures meant interviewing the employees of the case company and going through the human capital list with them. The actual interviews, where the current human capital was measured went well, but some clarifications needed to be made during them. The list was easy to understand for the interviewees, but the scales were sometimes too narrow, and they would have wanted to give half grades. Sometimes the importance varied between sales and delivery, which was also difficult to adjust to only one rating. In addition, some components were not that easy to understand and needed clarification in terms of the specifics, for example what system is meant in specific, or what things the component covers. After the clarification by the interviewer though, the component was clear for the interviewees. One thing, which is also notable is that the persons might have underestimated themselves at some point since they thought that

there is always room for improvement and this issue could have been tackled by using multiple evaluators, such as supervisors or colleagues (Hansson 2001). This part included also evaluation of the measures and analyzing the information (Lönnqvist et al.2005) The analysis included creating an overall rating for each component and person on each theme, transcribing the interviews and finding the final conclusions to each component. According to this information, the measures were improved and finalized.

The gap defined earlier in this study was that human capital measurement has been studied alone only on strategic and organization wide levels (e.g. Ingham 2007) or as a part of intellectual capital measurement (e.g. Lönnqvist et al. 2005), which does not give all the answers how to measure the current human capital in the context of this research. Instead competence and performance measurement are quite established methods in the literature and also define how to do measurement on lower levels in organization. Also, the previous literature was missing the measurement of supplier's human capital in projects and in hotel industry. This research succeeded to define a process to measure human capital by combining four different areas of research, measurement as an overall, competence, intellectual and performance measurement, and managed to create a framework for measuring human capital in organization's lower levels. It also identified some of the pain points, such as choosing the scales and designing the component definitions and brings them up so that those can be avoided in the future studies.

One important clarification also made by this research is that how human capital can be measured if there is no clear link to strategy and the human capital cannot be derived directly from there. This research clarifies that strategy can define the scope of the study and the market will then define the human capital. This research succeeds to create new information for this research area by defining a new framework for human capital measurement, which is mostly based on the current literature in competence measurement. This means that this research widens the competence, performance and general measurement literature to apply also human capital. The framework to measure human capital can be utilized in similar researches that study the human capital in specific context, which is not familiar for the organization, like the hotel industry in this case or even in researches that study human capital in different environments and situations in the future. Basically, the framework could be used by researchers, but also organizations and managers, which makes it very extensive. For example, managers could use this model to measure the current human capital in their team or in some specific projects or situation and the organization could design the measurement for different levels in organization by using this framework.

What is the gap between the required and current human capital in the case organization?

The gap between required and current human capital was identified by interviewing four case company employees. As an overall can be said that the **current human capital does not entirely match the required human capital**. Few areas, personal characteristics and organizational competence, are currently on a good level and can be said that those will not require any specific attention and development. Instead all other components would need more competence, knowledge or experience in the case company. The biggest improvement areas are hotel industry competence, knowledge and combined competence as well as the competence of the deliverable system. The current human capital is illustrated in Figure 21, where colors represent the average of the level of human capital components. The red components have the lowest level of human capital, which means the biggest gap between required and current human capital.

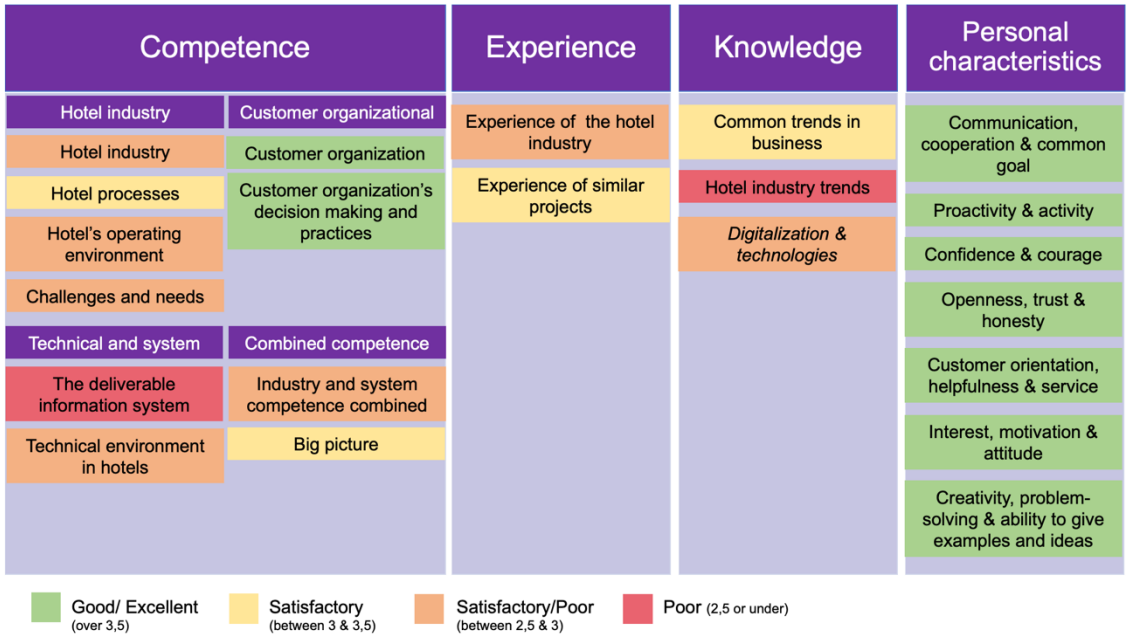

Figure 21: The current human capital in the case company

It is important to note that there are few employees who have better rating in few areas than other employees interviewed. In general, it can be said that two employees have experience of the hotel industry and the information system projects there. They also have good competence of hotel industry and slightly better knowledge of the trends in hotel industry than other interviewees. Other interviewees' competence in hotel industry, knowledge in hotel industry trends and experience of hotel industry and information system projects is quite low. The fact that the employees who have experience of hotel industry, have also higher competence and knowledge on those areas supports the argument from the literature, which defined that experience and education affect positively

to the knowledge and competence (Abel et al. 2008; Ployhart & Moliterno 2011). Though, even if the organization has two employees with this kind of human capital and the interviews emphasized that all of the team members would not need the competence of these areas, the need for additional competence and knowledge is identified by interviewees themselves and also according to the study. The organization should have at least one to two employees more and they should be especially consultants who have this kind of human capital in project's sales and delivery phases.

Another important gap was also recognized in the technical and system competence, which is on quite low level due to the fact that the employees were not familiar with the delivered information system and the current technical environments in hotels. This impacted also to the combined competence and its component since the employees were not able to combine their competence of hotel industry and the system. Also, the competence of the big picture is on a satisfactory level. All these areas would require more competence and the case company should consider how this could be gained.

The final gap is in the knowledge of the employees. The case organization should focus especially on hotel industry trend knowledge, but there are some improvement needs also in the knowledge of business trends and digitalization & technology trends to reach the required level of knowledge.

These results are important for the case organization in deciding if the current human capital is enough to enter the hotel information system market. Currently it seems that the current human capital is not enough and that actions should be taken in order to develop it to reach a required level. What also has to be emphasized here is that human capital is tied to individuals, who can leave the organization (Lönnqvist et al. 2005) or improve their skills. This means that it changes all the time so these results might not be valid for long. This is why measuring should be done frequently to always understand the current situation. After all, this study is a good starting point for the organization to consider the required and current human capital and the gap between these two. In addition, the identification of the gap could be beneficial also for other organizations in a similar situation. Before implementing the measures in their organization, they could get a good overview of the possible development areas. Since human capital is always organization specific and dynamic, it is not possible to actually link the current human capital to any literature.

This research fills the gap of the supplier's human capital in information system projects, which was brought up in the introduction and in the summary of literature research. It succeeds to create results regarding the required human capital of the supplier in hotel

industry projects. Since the research is able to create new information in this research area, the value of the research is notable. Also, the research manages to create important information for the case company, regarding the required human capital and gaps in current and required human capital, which is one reason it can be held as substantial. Since the literature was quite scarce in these areas before and there was not much information to reflect on, the research was challenging and demanding for the researcher. Though, the outcome agrees, as far as possible, with the previous literature of human capital, competence and supplier's human capital in information system projects.

8. CONCLUSIONS

8.1 Summary of the results

The research was able to answer all the research questions and to give results to the required human capital, gap between required and current human capital and the measurement of human capital through empirical and theoretical research. The empirical research was executed as a case study, which utilized theme interviews in order to gather the data. The interviews were conducted to employees of hotels, vendor and the employees of the case company. All of the interviews were semi-structured theme interviews, which utilized the literature research as a base. The material was analyzed with thematic analysis, which was used to identify recurring themes from the material.

The contribution of this thesis is that it fills the research gap of required human capital of the supplier in hotel information system projects. The human capital consists of specific competence, knowledge, experience and personal characteristics. Each of these categories is divided into themes and the themes further into components, which are defined in team and individual levels. This enables to understand the human capital of employees on a very practical level. The research recognized that competence, knowledge and experience of hotel industry and issues related to it, are very crucial for the supplier. In addition, technical and system competence, knowledge of common trends in business and digitalization are important as well as competence of the customer and its decision making and practices. Also, personal characteristics, such as communication, openness and confidence were considered critical as well as combined competence that emphasizes the need to understand bigger entities and the ability to combine competence from different areas. In general, it can be said that most of the components were needed in the sales and delivery phases, though the information often refined from the general level in sales to the delivery phase where it often was more customer specific. The main final result of the study, human capital list, is presented in Appendix E. This kind of listing of the required human capital has not existed in the literature before. As said, the literature has been quite scarce in the areas of supplier's human capital and especially in the hotel industry environment. Only few researchers have clarified the human capital of IT consulting and have kept the research on quite general level (e.g. Djavanshir & Agresti 2007; Pratt 2007; Dezdar & Sulaiman 2009; Huang et al. 2009; Gorman 2011). The results can be utilized by the case company, but also by other information system suppliers in hotel industry or even by the hotels to understand the required human capital. Of course, as said, it also has significance in the research landscape.

The second research objective, measurement of the current state of human capital, succeeded to clarify the practical process of measurement. It includes three phases: designing the measures, implementing them and using them, which were adopted from previous literature (e.g. Lönnqvist et al. 2005). This research focused on the first two. The design required defining the purpose of measuring, how the measures are selected and the selection of the measures as well as deciding the evaluator and the scales. This meant for example understanding of the strategic starting point for the research and conducting the interviews for hotels to clarify the measures. Implementing the measures meant interviewing the employees of the case company regarding the human capital list and evaluation of the measures and analyzing the information. Each part of the process had its own challenges in creating a fully understandable measurement, but after refining, testing and evaluating, the measures and measurement was successfully conducted. This is an important information for organizations and human capital measurement studies in the future.

This research does not only clarify the required human capital in hotel information system projects, but also defines a new perspective to study human capital in specific context and lower levels of organization. In this research, Viitala's (2005) process of competence management and measurement has been applied to all categories of human capital together with the Lönnqvist et al. (2005) model for measurement of intellectual capital and some performance and general measurement literature (e.g. Uusi-Rauva 1996; Wilkinson & Redman 2001). This research succeeds to create a new overall approach to measure the human capital, which is not focused solely on competence or intellectual capital, but rather human capital. This approach can be utilized in wide range of future researches in research literature and in concrete measuring done by organizations in hotel industry and also outside it.

The third research objective was to understand the gap between current and required human capital, which was then identified in some categories. Especially, hotel industry competence, knowledge and experience of the case company are not on the required level in the case company. In addition to that, a gap can be found in technical and system competence, combined competence and knowledge. Personal characteristics and customer organizational competence are already on a quite good level and there is no need to have specific attention on them. This is valuable information specifically for the case company but can also be utilized in other companies in similar situations as a base for understanding the gap in human capital. Though, this is only very general level guidance in that case since the human capital is always organization specific.

The research also has value for managers, human resource specialists and team leaders. The first implication is increased understanding of the human capital in hotel information system projects and this information could be useful for supplier's management and hotel's management to acquire the needed human capital. The second implication is understanding the possibilities to identify employees' development needs in an organization and how those could be defined for example in projects, teams or strategic situations. Third important implication is the measurement framework for human capital and how it can be used in practice. In addition, the research clarifies the potential problems during measurement. Fourth implication is the need to connect the strategy and individual level human capital to ensure the success of an organization. As it was said already in the beginning, the human capital is *the most important asset* in the organization (Fulmer & Ployhart 2014) or at least one of the most important ones (Boudreau & Ramstad 2008).

8.2 Evaluation of the research

The aim was to conduct the research as objectively as possible. Though, the research includes many aspects, which decrease the reliability of the research and affect to the results. In qualitative research, evaluation of the research can be done from the perspective of four criteria by Guba (1981): credibility, transferability, dependability, and confirmability. To evaluate Guba's criteria, we will utilize Shenton's (2004) strategies.

1) Credibility

Credibility deals with the congruency between the finding and reality (Merriam 1998). Shenton (2004) presents many options to increase the credibility of the study. One of them is to use well-established methods and describe the methodological choices. To ensure the credibility and reliability of the study, the research process has been presented as detailed as possible so that the researcher's actions are as exact and clear as possible. Each step is presented, and the actions taken in each step are described. The methods used are well-established and the analysis has been done two times to ensure that nothing is left unnoticed at the first time.

Since the interviews were based on themes, researcher was able to decide which issues were gone through in interviews. This might highlight the importance of some issues and underestimate some issues, which are not handled in the interviews. One issue regarding this was the deep technical competence, which was basically left out of the scope. This could result as missing information regarding that area, since the interviews were guided to direction, where those deep level competencies were not gone through. One

issue that might also affect to the issues handled in interviews is the variation of different roles of the interviewees. This might have given a good overview on human capital but also challenges to create conclusions. Though, theme interviews enabled also the iterative questioning, which might have incorporated deliberate lies (Shenton 2004).

The credibility of the study is affected also by the employment relationship that the researcher and case company have. According to Shenton (2004) early familiarity with the culture of the organizations before data collection increases credibility. The researcher knew the case company well before the data collection and had also discussions with the interviewees before interviews. The employment relationship was evident especially in the interview situations. From the customer and vendor side, researcher was seen as a representative of the case company, which may have influenced the responses of the interviews. On the other hand, the employees of the case company were very open and willing to take a part in the research when researcher was part of the same organization.

It is also notable that the sampling method has an effect on the research results. According to Shenton (2004) random sampling may negate charges of researcher bias. The focus group in first phase interviews were the case company's preferences so that they represent big portion of the Finnish hotel market. The research did not include any smaller hotels or hotel chains, which might affect to the results. Though, the results then represent most of the market and can be in that way considered to be credible. Again, also the second phase interviews were conducted to specific persons decided beforehand, which has its own effect on the results in this research.

The credibility involves also checking data, analysis and interpretations with participants (Saunders et al. 2016). In this research the final list was sent to the case company's employees to check their answers and consider the answers they had given. In addition, in the end of each first phase interviews, the researcher created an overall picture of the interview and asked the interviewee to confirm that.

The credibility has been ensured by emphasizing also the voluntary nature of the study, confidentiality, secure data processing, ability to cancel the participation and other rights that the interviewees have. This information was given prior the interviews and also during them. According to Shenton (2004) this is important to ensure honesty in informants.

The research includes a comprehensive theoretical research, which studies different perspectives and definitions of the terms of the study. It does not leave anything out of the scope on purpose and tries to bring out different perspectives objectively. The references have been made accurately so that it is possible to verify the claims made. These actions

are important in order to increase the credibility of the study since the examination of previous findings can be invaluable sources (Shenton 2004).

2) Transferability

According to Cole & Gardner (1979) and Pitts (1994) transferability requires for example information on the background of the study, such as number of organizations taking part, number of participants and data collection methods (cited in Shenton 2004). In this research, these have been described as precisely as possible in order to transfer it to another case organization and is therefore repeatable. Also, the analysis of the data has been presented as accurately as possible. The transferability is hampered by the confidentiality, which prevents, for example, utilization of the interview transcripts and interview recordings at later stage.

The research is a case study, which means that the human capital is tied to this specific organization and context. Similar research in other organizations or contexts would probably bring at least some new elements or different outcomes due to the human factors and context. The presumption was that the supplier has a required level of technical competence and understanding of information system projects in overall. The research is focused on the additional human capital that the hotel industry would require from the supplier. Although, some human capital, such as the personal characteristics can be valid in also other industries. However, the results were supported by the literature at least partly, hence the results can be utilized as a starting point and reflection for new research. Also, the reasons behind these differences were considered. According to Shenton (2004) the results of the study must be understood within the context of particular characteristics of the organization and geographical area, which is why it is important to establish the context and phenomenon.

3) Dependability

Dependability requires presenting the research design, its implementation and evaluation of the effectiveness of the process of inquiry (Shenton 2004). Dependability means recording all of the changes to produce a reliable account of the emerging research focus that may be understood and evaluated by others (Saunders et al. 2016). The research design, implementation and evaluation have been presented in the work as detailed as possible so that it can be repeated.

The dependability in this research is related to the empirical part of the research. Due to the time constraints, it was not possible to conduct interviews at a larger scale. For example, interviews for the management and bigger sample of the employees of the case

organization could have improved the reliability of the results. However, the current sample alone gave a good degree of saturation of the required human capital, so considering the given frame, the sample can be considered to be successful.

4) Conformability

Conformability means objectivity of the researcher, which after all is difficult to ensure. The work's findings should be experiences and ideas of the informants, rather than the preferences of the researcher. (Shenton 2004) The structure of the interviews was designed to comfort the objectives of the study and it was reviewed by the supervisors of the case company and the study to get another perspective to them. The questions were piloted in pilot interviews before the actual interviews in order to find any inconsistency in the questions and themes. These actions help to increase the objectivity of the study.

The research managed to create new information on the research area and the reliability of the results is increased by linking the empirical research and theory frame in Chapter 7, which binds the research results to theoretical framework. This is important in order to increase the conformability and reliability of the study according to Shenton (2004).

After all, the researcher's interpretations affect the results of the study. For example, the categories of human capital were derived from the literature and the themes recognized in the interviews were then placed under these categories. Some of the categories are overlapping, especially the competence and knowledge categories, and it was not always clear, which category the interviewee would have placed the specific competence or knowledge. The researcher had to make decisions, where each theme was placed. Those themes could have been also derived from the interviews, which would have possibly created a different outcome. It is also arguable in this case if the competence and knowledge should not be separated in this kind of research that focuses on knowledge intensive work.

8.3 Future areas of research

Because of the subject of the study, there are multiple possible future areas of research. First of all, the research on human capital and human capital measurement as well as competence measurement is quite scarce as well as the research on supplier's human capital in information system projects. Specifically, the relationship between human capital and competence should be further defined because they are used in many ways in the literature and the relationship between them is not clear.

Regarding this specific research, the future areas of research could be for example wider human capital research in the case organization to get a holistic view of the organization's human capital. As presented already earlier, the time frame of the research affected to the sample size of the case company's employees. From a wider research, we could find more gaps and issues to be developed. Also, the structure of the list might change when more opinions and ideas would have affected it. All in all, this kind of research might reveal new areas of development and a wider picture of the research topic in the organization. One perspective would be also to consider the management's perspective to the list and its components since the strategic view is very important in the human capital management. The management could be able to bring strategic thinking to the research topic even if they do not have experience on this specific human capital. The list could be tested also in other organizations in order to find out the improvement points and weaknesses and make the study more transferable and general.

In order to create a better view of parts of the research area, future research could focus on for example only one specific task or role at a time and its human capital, rather than the whole team's human capital. This could be more specific research for one task and could clarify the specific combination of the human capital required. Another option would be to focus on one theme of the human capital, such as the technical competences to clarify its specific components in more detail and meaning in the projects. Since this study did not really focus on the technical aspects, it could be worthwhile to study also that aspect in more detail. As a broader perspective, we could also study the whole project team human capital, which would include also the customer's human capital. This kind of research could bring more clarification to the team dynamics and the gaps compared to the customer organization. In addition, the future research could consider the combination of individual's specific human capital in order to define more the dependencies between the skills and competences. After all, this study is a good starting point for this kind of research.

REFERENCES

Abbott, P. & Lewry, S. (1999). Introduction, P. Abbott & S. Lewry, eds., Front Office (Second Edition), Oxford: Butterworth-Heinemann, s. 1–16.

Abel, M. (2008). Competencies management and learning organizational memory, Journal of Knowledge Management, Vol. 12(6), pp. 15–30.

Agutter, C. & Baker, A. (2019). ITIL 4 Essentials: Your essential guide for the ITIL 4 Foundation exam and beyond, ITGP.

Amit, R. & Livnat, J. (1988). Diversification Strategies, Business Cycles and Economic Performance, Strategic Management Journal; Chicago, Vol. 9(2), pp. 99.

Anttila, P. (1996). Tutkimisen taito ja tiedon hankinta. Available: https://metodix.fi/2014/05/17/anttila-pirkko-tutkimisen-taito-ja-tiedon-hankinta/

Baker, J. C., Mapes, J., New, C. C. & Szwejczewski, M. (1997). A hierarchical model of business competence, Integrated Manufacturing Systems, Vol. 8(5), pp. 265–272.

Banai, M. & Tulimieri, P. (2013). Knowledge, skills and personality of the effective business consultant, Journal of Management Development, Vol. 32(8), pp. 886–900.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage, Journal of Management, Vol. 17(1), pp. 99–120.

Barney, J. B. & Wright, P. M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage, Human Resource Management, Vol. 37(1), pp. 31.

Baron, A. & Armstrong, M. (2007). Human Capital Management: Achieving Added Value Through People, London, UNITED KINGDOM: Kogan Page.

Barth, C. & Koch, S. (2019). Critical success factors in ERP upgrade projects, Industrial Management + Data Systems, Vol. 119(3), pp. 656–675.

Baum, T. & Odgers, P. (2001). Benchmarking Best Practice in Hotel Front Office: The Western European Experience, Journal of Quality Assurance in Hospitality & Tourism, Vol. 2(3–4), pp. 93–109.

Beaver, A. (2012). A dictionary of travel and tourism, Oxford: University Press.

Becker, G. S. (1964). Human capital: a theoretical and empirical analysis, with special reference to education, New York: National Bureau of Economic Research.

Bergenhenegouwen, G. J., ten Horn, H. F. K. & Mooijman, E. A. M. (1997). Competence development - a challenge for human resource professionals: core competences of organizations as guidelines for the development of employees, Industrial and Commercial Training, Vol. 29(2), pp. 55–62.

Bilgihan, A., Okumus, F., “Khal” Nusair, K. & Joon-Wuk Kwun, D. (2011). Information

technology applications and competitive advantage in hotel companies, Journal of Hospitality and Tourism Technology, Vol. 2(2), pp. 139–153.

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

Bontis, N. (2001). Assessing knowledge assets: a review of the models used to measure intellectual capital, International Journal of Management Reviews, Vol. 3(1), pp. 41–60.

Bontis, N. (2005). National Intellectual Capital Index: The Benchmarking of Arab Countries., Intellectual Capital for Communities : Nations, Regions, and Cities.

Boudreau, J. W. & Ramstad, P. M. (2008). Osaamisen hallinnan uusi ulottuvuus, Helsinki: Talentum.

Bounfour, A. & Edvinsson, L. (2005). Intellectual Capital for Communities: Nations, Regions, and Cities, Burlington, UNITED STATES: Routledge.

Bradley, J. (2008). Management based critical success factors in the implementation of Enterprise Resource Planning systems, International Journal of Accounting Information Systems, Vol. 9(3), pp. 175–200.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology, Qualitative Research in Psychology, Vol. 3(2), pp. 77–101.

Brooking, A. (1997). Intellectual capital, London; New York: International Thomson Business Press.

Buhalis, D. & Costa, C. (2005). Tourism Management Dynamics: Trends, Management and Tools.

Business Finland (2020). Foreign overnights in Finland 2019. Available: https://www.businessfinland.fi/4958c7/globalassets/julkaisut/visit-finland/tutkimukset/2020/2019-review---travel-in-finland.pdf

Carson, E., Ranzijn, R., Winefiel, A. & Marsden, H. (2004). Intellectual capital: Mapping employee and work group attributes, Journal of Intellectual Capital; Bradford, Vol. 5(3), pp. 443–463.

Chang, S. J. (1996). An evolutionary perspective on diversification and corporate restructuring: Entry, exit, and economic performance during 1981-89, Strategic Management Journal; Chicago, Vol. 17(8), pp. 587.

Chauhan, V. & Singh, J. (2017). A Enterprise Resource Planning Systems for Service Performance in Tourism and Hospitality Industry, International Journal of Hospitality and Tourism Systems; Kurukshetra, Vol. 10(1), pp. 57–62.

Cheung, G. W. (1999). Multifaceted Conceptions Of Self-Other ratings Disagreement, Personnel Psychology, Vol. 52(1), pp. 1–36.

Coff, R. W. (1997). Human assets and management dilemmas: coping with hazards on the road to resource-based theory, Academy of Management Review, Vol. 22(2), pp. 374–402.

Colomo-Palacios, R., Casado-Lumbreras, C., Soto-Acosta, P., García-Peñalvo, F. J. & Tovar-Caro, E. (2013). Competence gaps in software personnel: A multi-organizational study, Computers in Human Behavior, Vol. 29(2), pp. 456–461.

Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J. & Ketchen, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance., Journal of Applied Psychology, Vol. 96(3), pp. 443–456.

Crotty, M. (1998). The foundations of social research: meaning and perspective in the research process, London: Sage.

Davenport, T. & Prusak, L. (1998). Working Knowledge: How Organizations Manage What They Know, Boston: Harvard Business School Press.

Dezdar, S. & Sulaiman, A. (2009). Successful enterprise resource planning implementation: taxonomy of critical factors, Industrial Management & Data Systems; Wembley, Vol. 109(8), pp. 1037–1052.

DiPietro, R. B. & Wang, Y. (Raymond) (2010). Key issues for ICT applications: impacts and implications for hospitality operations, Worldwide Hospitality and Tourism Themes, Vol. 2(1), pp. 49–67.

Djavanshir, G. R. & Agresti, W. W. (2007). IT Consulting: Communication Skills Are Key, IT Professional, Vol. 9(1), pp. 46–46.

Edvinsson, L. & Malone, M. S. (1997). Intellectual capital: realizing your company's true value by finding its hidden brainpower, New York (N.Y.): HarperBusiness.

Enz, C. A. (2009). Human Resource Management: A Troubling Issue for the Global Hotel Industry, Cornell Hospitality Quarterly, Vol. 50(4), pp. 578–583.

Eriksson, P. & Kovalainen, A. (2008). Qualitative Methods in Business Research, 1 Oliver's Yard, 55 City Road, London England EC1Y 1SP United Kingdom: SAGE Publications Ltd.

Finney, S. & Corbett, M. (2007). ERP implementation: a compilation and analysis of critical success factors, Business Process Management Journal, Vol. 13(3), pp. 329–347.

Fui-Hoon Nah, F., Lee-Shang Lau, J. & Kuang, J. (2001). Critical factors for successful implementation of enterprise systems, Business Process Management Journal, Vol. 7(3), pp. 285–296.

Fulmer, I. S. & Ployhart, R. E. (2014). "Our Most Important Asset": A Multidisciplinary/Multilevel Review of Human Capital Valuation for Research and Practice, Journal of Management, Vol. 40(1), pp. 161–192.

Fyall, A., Legohérel, P. & Poutier, E. (2013). Revenue management for hospitality and tourism., Oxford: Goodfellow Publishers Ltd.

Garavan, T. N. & McGuire, D. (2001). Competencies and workplace learning: some reflections on the rhetoric and the reality, Journal of Workplace Learning, Vol. 13(4), pp. 144–164.

Gorman, M. F. (2011). A Case Study in Effectively Bridging the Business Skills Gap for

the Information Technology Professional, Journal of Education for Business, Vol. 86(1), pp. 17–24.

Gratton, L. & Ghoshal, S. (2003). Managing Personal Human Capital: New Ethos for the 'Volunteer' Employee, European Management Journal, Vol. 21(1), pp. 1–10.

Guba, E. G. (1981). Criteria for Assessing the Trustworthiness of Naturalistic Inquiries, Educational Communication and Technology, Vol. 29(2), pp. 75–91.

Ham, S., Gon Kim, W. & Jeong, S. (2005). Effect of information technology on performance in upscale hotels, International Journal of Hospitality Management, Vol. 24(2), pp. 281–294.

Hamani, N., Mouawad, P., Kermad, L. & Mhamedi, A. E. (2012). Working team composition in ERP implementation project, CCCA12, s. 1–6.

Hansson, B. (2001). Competency models: are self-perceptions accurate enough?, Journal of European Industrial Training, Vol. 25(9), pp. 428–441.

Hertzfeld, E. (2015a). Technology advances revolutionize hotel operations, Hotel Management, Vol. 230(9), pp. 47–48.

Hertzfeld, E. (2015b). Variety of reasons motivate hotels to upgrade PMS technology, Hotel Management; Newton, Vol. 230(14), pp. 56.

Hirsjärvi, S. & Hurme, H. (2015). Tutkimushaastattelu: teemahaastattelun teoria ja käytäntö, Helsinki: Gaudeamus Helsinki University Press.

Hitt, M. A., Hoskisson, R. E. & Ireland, R. D. (1994). A Mid-Range Theory of the Interactive Effects of International and Product Diversification on Innovation and Performance, Journal of Management, Vol. 20(2), pp. 297–326.

Horwath HTL (2019). European Chains & Hotels Report 2019.

Huang, H., Kvasny, L., Joshi, K. D., Trauth, E. M. & Mahar, J. (2009). Synthesizing IT job skills identified in academic studies, practitioner publications and job ads, Proceedings of the special interest group on management information system's 47th annual conference on Computer personnel research, Limerick, Ireland: Association for Computing Machinery, s. 121–128.

Hussi, T. (2004). Reconfiguring knowledge management - combining intellectual capital, intangible assets and knowledge creation, Journal of Knowledge Management, Vol. 8(2), pp. 36–52.

Hyppänen, R. (2013). Esimiesosaaminen: liiketoiminnan menestystekijä, Helsinki: Edita.

Hyrkäs, E. (2009). Osaamisen johtaminen Suomen kunnissa, Lappeenranta: Lappeenrannan teknillinen yliopisto.

Ilmarinen, V. & Koskela, K. (2015). Digitalisaatio: yritysjohdon käsikirja, Helsinki: Talentum.

Ingham, J. (2007). Strategic Human Capital Management | ScienceDirect.

Jänkälä, S. (2019). Matkailun toimialaraportti, Työ- ja elinkeinoministeriö.
Kaplan, R. S. & Norton, D. P. (1992). The balanced scorecard-measures that drive performance, Vol. 70(1), pp. 71-.

Kashdan, T. B., Rose, P. & Fincham, F. D. (2004). Curiosity and Exploration: Facilitating Positive Subjective Experiences and Personal Growth Opportunities, Journal of Personality Assessment, Vol. 82(3), pp. 291–305.

Kehä, H. & Valtiovarainministeriö. Henkilöstöosasto (1995). Henkilöstön osaaminen ratkaisee: henkilöstön kehittämishanke: raportti 1995, Helsinki: Painatuskeskus.

Kelemen, M. & Rumens, N. (2008). An introduction to critical management research, Los Angeles: SAGE.

Keong Choong, K. (2008). Intellectual capital: definitions, categorization and reporting models, Journal of Intellectual Capital, Vol. 9(4), pp. 609–638.

Kimes, S. E. (2011). The future of hotel revenue management, Journal of Revenue and Pricing Management, Vol. 10(1), pp. 62–72.

Kirjavainen, P. & Laakso-Manninen, R. (2000). Strategisen osaamisen johtaminen: yrityksen tieto ja osaaminen kilpailuedun lähteeksi, Helsinki: Edita.

Kujansivu, P. (2008). Intellectual capital management: understanding why Finnish companies do not apply intellectual capital management models, Tampere: University of Technology.

Lache, C. (2011). Competence management, Anuarul Institutului de Cercetari Economice “Gheorghe Zane” - Iasi; Bucharest, Vol. 20(2), pp. 125–131.

Laitinen, E. K. (2003). Yritystoiminnan uudet mittarit, Helsinki: Talentum.

Langvinienė, N. & Daunoravičiūtė, I. (2015). Factors Influencing the Success of Business Model in the Hospitality Service Industry, Procedia - Social and Behavioral Sciences, Vol. 213, pp. 902–910.

Lashley, C. & Lee-Ross, D. (Eds.) (2003). Chapter 2 - Organizational structure and design, Organization Behaviour for Leisure Services, Oxford: Butterworth-Heinemann, s. 19–42.

Laughlin, S. P. (1999). AN ERP GAME PLAN, Journal of Business Strategy, Vol. 20(1), pp. 32–37.

Law, C. C. H., Chen, C. C. & Wu, B. J. P. (2010). Managing the full ERP life-cycle: Considerations of maintenance and support requirements and IT governance practice as integral elements of the formula for successful ERP adoption, Computers in Industry, Vol. 61(3), pp. 297–308.

Law, R. & Jogaratnam, G. (2005). A study of hotel information technology applications, International Journal of Contemporary Hospitality Management, Vol. 17(2), pp. 170–180.

Lehtonen, T. J. (2002). Organisaation osaamisen strateginen hallinta, Tampere University Press: Taju [jakaja], Tampere.

Leposa, A. (2014). PMS: Integration and standards, Hotel Management; Newton, Vol. 229(5), pp. 27.

Lev, B. (2001). Intangibles Management, Measurement, and Reporting, Washington, D.C: Brookings Institution Press.

Lock, S. (2019, December 17). Global hotel industry market size 2014-2018, Statista.

Long, C. & Vickers-Koch, M. (1995). Using core capabilities to create competitive advantage, Organizational Dynamics, Vol. 24(1), pp. 7–22.

Lönnqvist, A., Kujansivu, P. & Antola, J. (2005). Aineettoman pääoman johtaminen, Oitmäki: JTO-palvelut.

LS Retail (2020). LS Central for hotels, LS Retail.

Mahoney, J. T. & Kor, Y. Y. (2015). Advancing the Human Capital Perspective on Value Creation by Joining Capabilities and Governance Approaches, Academy of Management Perspectives, Vol. 29(3), pp. 296–308.

Malmi, T., Peltola, J. & Toivanen, J. (2002). Balanced scorecard: rakenna ja sovella tehokkaasti, Helsinki: Kauppakaari.

Markham, C. (Ed.) (2004). The Nature of Consultancy, 4th ed., London, England: Kogan Page.

McGuire, K. A. (2016). Hotel pricing in a social world: driving value in the digital economy, Hoboken, New Jersey: John Wiley & Sons, Incorporated.

Medlik, S. (2000). The business of hotels, 4th ed., Oxford: Butterworth-Heinemann.

Merriam, S. B. (1998). Qualitative research and case study applications in education, San Francisco (Calif.): Jossey-Bass.

Miller, D., Xu, X. & Mehrotra, V. (2015). When is human capital a valuable resource? The performance effects of Ivy league selection among celebrated CEOs, Strategic Management Journal, Vol. 36(6), pp. 930–944.

Mouritsen, J., Nikolaj Bukh, P. & Marr, B. (2004). Reporting on intellectual capital: why, what and how?, Measuring Business Excellence, Vol. 8(1), pp. 46–54.

Navío-Marco, J., Ruiz-Gómez, L. M. & Sevilla-Sevilla, C. (2018). Progress in information technology and tourism management: 30 years on and 20 years after the internet - Revisiting Buhalis & Law's landmark study about eTourism, Tourism Management, Vol. 69, pp. 460–470.

Nonaka, I. (2007). The Knowledge-Creating Company, Harvard Business Review, Vol. 85(7/8), pp. 162–171.

Nordhaug, O. & Gronhaug, K. (1994). Competences as resources in firms, International Journal of Human Resource Management, Vol. 5(1), pp. 89–106.

Nyberg, A. J., Moliterno, T. P., Hale, D. & Lepak, D. P. (2014). Resource-Based Perspectives on Unit-Level Human Capital: A Review and Integration, Journal of Management, Vol. 40(1), pp. 316–346.

Parida, V. (2018). Digitalization, Addressing Societal Challenges, s. 23–38.

Parthasarathy, S. & Sharma, S. (2016). Efficiency analysis of ERP packages—A customization perspective, Computers in Industry, Vol. 82, pp. 19–27.

Pedersen, S., Westman, S., Bülte, B. & Rentsch, M. S. (2017). The hospitality market in Scandinavia, PWC. Available: https://www.pwc.ch/en/publications/2017/hospitality-market-scandinavia.pdf

Penrose, E. T. (2009). The theory of the growth of the firm, Oxford; Oxford University Press.

Pereira-Moliner, J., Pertusa-Ortega, E. M., Tarí, J. J., López-Gamero, M. D. & Molina-Azorín, J. F. (2016). Organizational design, quality management and competitive advantage in hotels, International Journal of Contemporary Hospitality Management, Vol. 28(4), pp. 762–784.

Piccoli, G. (2008). Information Technology in Hotel Management: A Framework for Evaluating the Sustainability of IT-Dependent Competitive Advantage, Cornell Hospitality Quarterly, Vol. 49(3), pp. 282–296.

Pinto, J. K. & Millet, I. (1999). Successful information system implementation the human side, second edition, 2nd ed., Newtown Square, Pa: Project Management Institute.

Pinto, J. K. & Slevin, D. P. (1987). Critical factors in successful project implementation, IEEE Transactions on Engineering Management, Vol. EM-34(1), pp. 22–27.

Piturro, M. (1999). How midsize companies are buying ERP, Journal of Accountancy, Vol. 188(3), pp. 41–48.

Ployhart, R. E. & Moliterno, T. P. (2011). Emergence of the Human Capital Resource: A Multilevel Model, Academy of Management Review, Vol. 36(1), pp. 127–150.

Prahalad, C. K. & Hamel, G. (1999). The Core Competence of the Corporation, M. H. Zack, ed., Knowledge and Strategy, Boston: Butterworth-Heinemann, s. 41–59.

Pratt, M. K. (2007). The IT As Consultant, Computerworld; Framingham, Vol. 41(18), pp. 23–24.

Pucciani, K. & Murphy, H. (2011). An Investigation of Data Management And Property Management Systems In Hotels, Tourism and Hospitality Management, Vol. 17(1), pp. 101–114.

Puusa, A. & Reijonen, H. (2011). Aineeton pääoma organisaation voimavarana, Kuopio: Unipress.

Quinones, M., Ford, K. & Teachout, M. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review.

Rastogi, P. N. (2003). The nature and role of IC, Journal of Intellectual Capital, Vol. 4(2), pp. 227–248.

Ratna, S., Astuti, E. S., Utami, H. N., Rahardjo, K. & Arifin, Z. (2018). Characteristics of

tasks and technology as a driver of task-technology fit and the use of the hotel reservation information system, VINE Journal of Information and Knowledge Management Systems; Bingley, Vol. 48(4), pp. 579–595.

Rautiainen, M. & Siiskonen, M. (2015). Hotellivaraukset: majoitusala tutuksi, , 9. p., Helsinki: Restamark.

Rivera-Ibarra, J. G., Rodríguez-Jacobo, J., Fernández-Zepeda, J. A. & Serrano-Vargas, M. A. (2010). Competency Framework for Software Engineers, 2010 23rd IEEE Conference on Software Engineering Education and Training, s. 33–40.

Robbins, S. P. (2002). Essentials of organizational behavior, Upper Saddle River (NJ): Prentice Hall.

Roehl, T. W. & Itami, H. (1991). Mobilizing Invisible Assets, Cambridge, UNITED STATES: Harvard University Press.

Roos, G., Fernström, L., Piponius, L. & Rastas, T. (2006). Aineeton pääoma: johdon käsikirja, Helsinki: Edita.

Roos, J. (1997). Intellectual capital: navigating the new business landscape, Basingstoke.

Ruohotie, P. (1998). Motivaatio, tahto ja oppiminen, Helsinki: Edita.

Rutherford, D. G. (Ed.) (2002). Hotel management and operations, 3rd ed, New York: Wiley.

Saunders, M. N. K., Lewis, P. & Thornhill, A. (2016). Research methods for business students, Seventh edition, New York: Pearson Education.

See Pui Ng, C., Gable, G. G. & Chan, T. (2002). An ERP-client benefit-oriented maintenance taxonomy, The Journal of Systems & Software, Vol. 64(2), pp. 87–109.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects, Education for Information, Vol. 22(2), pp. 63–75.

Simons, R. (2000). Performance measurement & control systems for implementing strategy, Upper Saddle River (N.J.): Prentice Hall.

Singh, R., Mathew, P., Granderson, J., Shukla, Y. & Behera, A. R. (2018). Packaged scalable energy information systems for hotels, Journal of Facilities Management, Vol. 16(2), pp. 119–141.

Somers, T. M. & Nelson, K. (2001). The impact of critical success factors across the stages of enterprise resource planning implementations, Proceedings of the 34th Annual Hawaii International Conference on System Sciences, s. 10.

Sommerville, I. (2006). Software engineering, 8. ed., Harlow: Addison-Wesley.

Stewart, T. A. (1997). Intellectual capital: the new wealth of organizations, London: Brealey.

Stringam, B. B. & Partlow, C. G. (2016). A profile of the hospitality industry, First edi-

tion., New York, New York (222 East 46th Street, New York, NY 10017): Business Expert Press.

Sveiby, K. E. (1997). The New Organizational Wealth: Managing & Measuring Knowledge-based Assets, , Vol. 1st ed, San Francisco: Berrett-Koehler Publishers.

Sydänmaanlakka, P. (2000). Älykäs organisaatio: tiedon, osaamisen ja suorituksen johtaminen, Helsinki: Kauppakaari.

Tangney, J. P., Baumeister, R. F. & Boone, A. L. (2004). High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success, Journal of Personality, Vol. 72(2), pp. 271–324.

Tashakkori, A. & Teddlie, C. (2003). Handbook of mixed methods in social & behavioral research, Thousand Oaks (Calif.): SAGE.

Työ ja elinkeinoministeriö, E.-, liikenne-ja ympäristökeskus (2019). Matkailualan näkymät kevät 2019.

Uusi-Rauva, E. (1996). Ohjauksen tunnusluvut ja suoritusten mittaus, Tampere: Tampereen teknillinen korkeakoulu.

Vaismoradi, M., Turunen, H. & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study, Nursing & Health Sciences, Vol. 15(3), pp. 398–405.

Valorinta, V. (2008). Hotellivarausten arvoketju, Espoo: Booking Partner.

Vargas, N., Lloria, M. B. & Roig-dobón, S. (2016). Main drivers of human capital, learning and performance, Journal of Technology Transfer; Indianapolis, Vol. 41(5), pp. 961–978.

Verville, J. & Halingten, A. (2002). An investigation of the decision process for selecting an ERP software: the case of ESC, Management Decision, Vol. 40(3), pp. 206–216.

Verville, J. & Halingten, A. (2003). A six-stage model of the buying process for ERP software, Industrial Marketing Management, Vol. 32(7), pp. 585–594.

Vianna, R. H. P., Fonseca, F., Mello, A. M. & Nascimento, P. T. (2014). ERP adoption in the hotel industry: How software implementation becomes development, Proceedings of PICMET ’14 Conference: Portland International Center for Management of Engineering and Technology; Infrastructure and Service Integration, s. 3367–3375.

Viitala, R. (2005). Johda osaamista!: osaamisen johtaminen teoriasta käytäntöön, Helsinki: Inforviestintä.

Wenhong Luo & Strong, D. M. (2004). A framework for evaluating ERP implementation choices, IEEE Transactions on Engineering Management, Vol. 51(3), pp. 322–333.

Wiig, K. M. (1997). Integrating intellectual capital and knowledge management, Long Range Planning, Vol. 30(3), pp. 399–405.

Wilkinson, A. & Redman, T. (2001). Contemporary human resource management: text and cases, Harlow: Financial Times Prentice Hall.

World Tourism Organization (UNWTO) (Ed.) (2019). International Tourism Highlights, 2019 Edition, World Tourism Organization (UNWTO).

Wybo, M. (2007). The IT sales cycle as a source of context in IS implementation theory, Information & Management, Vol. 44(4), pp. 397–407.

Yin, R. K. (2014). Case Study Research: Design and Method (5th edn), 5th edition, London: Sage.

Youndt, M. A., Subramaniam, M. & Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns*, Journal of Management Studies, Vol. 41(2), pp. 335–361.

APPENDIX A: INTERVIEW FRAME – PHASE 1

Background

Could you please tell shortly about yourself and how you have been involved in information system projects?

Hotel industry

What are the core processes in hotels for the business?

What are the main characteristics of hotel industry when for example compared to other industries?

What are the challenges/trends that you are facing currently or in the future?

Hotel information systems

What are the characteristics of hotel information systems? How would you describe them?

Does the current PMS support your processes?

What are the pros of current PMS system?

What are the cons of current PMS system?

If you were going to buy a new hotel information system, what aspects would you consider in the selection of the supplier?

Human capital

What human capital does your organization have as a customer that is needed in the hotel information system project?

Could you tell, what is the first supplier's human capital that come to your mind, which is important in the projects?

Experience and education

Should the supplier's team or the individuals have a specific experience?

Should the supplier's team or the individuals have a specific education?

Do the requirements for these differ in sales and delivery phases, how?

Knowledge

What essential information the team or consultant should have in project (for ex. industry knowledge)?

How the information differs in sales and delivery phases?

Competence

What kind of competence should the team or consultant have in the project?

What kind of competence of the specific organization do you consider important?

Personal characteristics

What kind of personal characteristics do you consider important? What kind of people would you like to work with in this project?

What kind of social competence is important?

How the personal characteristics differ in sales and delivery phases?

Final questions

What is the most important competence, the supplier can give for your organization?

What human capital is not relevant for the supplier? What the customer has already, and/or supplier does not need?

What are the first and second important human capital that the supplier should have in the hotel information system projects?

Is there something you would like to add?

How can I contact you if I have any questions?

APPENDIX B: INTERVIEW FRAME – PHASE 2

Background

Could you please tell me something about your yourself and your professional background?

Open questions

What human capital should the project team definitely have in hotel information system projects?

What do you believe is the difference between hotel industry projects and other industries?

Do you believe that Solteq has enough human capital to execute these projects?

Human capital list of the hotel information system projects

At this point the interviewer and interviewee went through the list, interviewer introduced every component and interviewee answered with the number and arguments.

Questions after the list

Do you think that something is missing from the list?

Do you think that something does not belong to this list?

How do you feel about the list in overall?

APPENDIX C: DATA PROTECTION AND PROCESSING TEMPLATE

Tampere 28.5.2020

Data processing and data protection

The interviewing material is collected for research purposes of the master's thesis. The material is used to improve Solteq Plc's understanding of human capital in hotel information system projects.

The thesis itself is public, except for some appendixes. In the text part of the dissertation, the interview material is pseudonymized, in which case the answers of an individual or company are not identifiable.

The study examines the human capital required for hotel information system projects. This may also include the processing of sensitive information under the Personal Data Act, provided that the interviewee discloses it himself or herself, but is not directly asked. The interviewee may withdraw the participation at any stage of the study without reason.

It would be great if I could record the interviews to make the interview situation smooth and research material comprehensive. The recordings are kept only for the time necessary for the thesis, after which they are destroyed. Recordings are kept for a maximum of 6 months from the time of the interview. The estimated completion of the dissertation is September 2020.

The persons handling the recordings (the author of the research and, if necessary, the supervisors of the thesis) have a duty of confidentiality. Recordings and interview notes are processed in Finland and stored on Solteq Plc's Microsoft OneDrive server. Disclosure of the recording to persons other than those necessary for the research requires the consent of the interviewee.

According to the Personal Data Act and the GDPR, the interviewees have the right to e.g. to see the data stored about them, to obtain information on the use and processing of data relating to them and to restrict the processing of data already provided.

The registrar for the interview information is the same as the author and interviewer of the master's thesis: Laura Malmivuori (+358 XX XXXXXX).

☐ Interviews may be recorded

☐ Pseudonymized quotations from the interview can be used in the thesis

Pseudonymized quotes in the public thesis in the form of "comment" – Interviewee 1, as well as, if necessary, an industry general statement. Quotations cannot identify the respondent.

☐ **I understand and accept the data protection principles**

You have always the option to ask for more information or cancel your participation if you wish.

_____

Signature and name clarification

_____

Place and time

NOTE! If it is not possible to sign the form, an e-mailed confirmation will be sufficient, including a separate confirmation of all the above. In this case, the consent can be returned by recording the consent either in this document or in a separate e-mail.

APPENDIX D: HUMAN CAPITAL LIST – FIRST VERSION

Code	Human capital	Clarification	Sales and delivery phase differences
	Competence		
	Hotel industry competence		
A1	**Hotel industry**	*Understanding the industry and its policies, functions, practices (such as hotel operations) and product. Among other things, the hotel is a large entity with a variety of activities, customer focus, internationality, different customers and customer segments, brand and visibility, pricing and a long time between booking and stay.*	*Ideally, the same information should be available for sales and delivery. In the sales phase, need to know the procedures and processes in order to know how to sell the right thing.*
A2	**Hotel processes**	*Customer process from booking to departure (especially bookings), distribution process, internal processes supporting the customer process (e.g. housekeeping and maintenance), business processes.*	*It was seen that more generic competence in the sales phase and more refined competence in the delivery phase.*
A3	**Hotel's operating environment**	*Understanding the operating environment (location and market). For example, how does the location in different parts of Finland and the Finnish market affect? Who are the competitors? Also understanding of the operating environment of the hotel itself, ie the core product (accommodation) and the services and products that support it (restaurant, spa, etc.). The hotel is a very unique operating environment.*	
A4	**Challenges and needs**	*Understanding what the challenges and needs of the hotel industry are now and in the future. Among other things, increasing self-service, personalizing the customer and user perspective, Covid-19, system architecture and interfaces, utilization of automation, payment, better utilization of data, change in the booking process.*	*These were seen to focus more on the organizational level the further the project goes.*
	Technical and system competence		
A5	**The deliverable information system**	*Knowing the product: how does the system work, what can it do and what can't? For what is it built for? Technical and functional understanding.*	*Some thought that the seller should also know the product really well in terms of its technical features, some thought that the seller should know who to ask. As a whole, however, it was felt that at the sales stage, it is very important to be able to tell what the system is like and what it does. However, this expertise was also seen to be further specified in the project.*
A6	**Current technical environments in hotels (architectures)**	*Understand the current complex systems and architectures of hotels. Can plant the system in an existing architecture and operating environment.*	
A7	**Integrations, interfaces and competence in these areas**	*Integrations and interfaces were seen as a major challenge and need, so knowing and understanding them already at the sales stage would be important. Where the integrations can and should be made and how can they be implemented?*	*It is important to understand already at the sales stage, as they are a big and important part of the hotel infrastructure. In the delivery phase, competence is more focused on the integrations and interfaces of the organization in question.*
	Customer organizational competence		
A8	**Customer organization**	*What the organization does, where and how? What kind of organization is it and what is its product compared to other products on the market. However, it is not necessary to know too in-depth information.*	*It was mostly emphasized that the competence refines, the further the project goes. However, it was felt important to know as much as possible about the organization in question and its operating methods and decision-making, even at the beginning, in order to make the delivery phase smoother. In the delivery phase, need to be able to break down operations and processes into small pieces and understand the customer's needs at a deeper level.*
A9	**Customer organization and its operating environment**	*Understanding the current practices, challenges, needs and processes, etc. of that organization and prioritizing things. The architecture and system of the customer in question is also understood.*	*The earlier one is able to map, for example, customer challenges and system architecture, the better. Sometimes it is good to have a deeper understanding of certain needs already at the sales stage in order to refine the scope of the project. As mentioned earlier, several things will be specified at the organizational level, the further we go in the project.*
	Other competence		
A10	**Industry and system competence combined**	*Combining an understanding of the industry, its processes and needs with systems expertise and thereby creating solutions. Understand what is sloved and how.*	*In the sales phase, higher-level competence is sufficient, such as what customer problems are being solved and telling it. The delivery phase must go deeper into these problems and challenges, as well as the level of implementation.*
A11	**Big picture understanding and solving**	*Understanding and solving the whole and its various components. For example, the totality of different processes, matters outside the system (such as hardware) and, in general, the impact of the operating environment on the whole. Not only look at the system, but also the larger whole and is able to give solutions mirroring the whole.*	
	Experience (and education)		
B12	**Experience of the hotel industry**	*With own experience will get the best understanding of the hotel industry. Through experience one is able to understand e.g. what is important and understands what the customer is thinking. Not everyone on the team needs to have experience, but at least part of the team.*	*Important in both the sales and delivery phases. At the sales stage, experience brings added value, especially if the supplier can show that he understands the customer particularly well. At the delivery stage, the experience of a specific environment brings special added value.*
B13	**Experience of similar projects**	*Experience of similar projects (mainly from the same industry) helps to understand the functionalities of the system and why certain things go a certain way. It also builds trust and credibility when things have been done before. Most customers do not want to be a pilot project. Experience of similar projects must be somewhere, at the latest on a individual level.*	*Also at the sales stage, it would be good to have this kind of experience to know what can be promised and what will succeed. For some, the experience of delivering a hotel information system is not always necessary, but it creates much more reliability and credibility and was considered important by most.*
	Knowledge		
C14	**Common trends in business**	*Able to see a bigger picture and general trends in different industries. The best ideas may not be industry-specific.*	
C15	**Hotel industry trends**	*Know what's going on in the hotel industry and what's on the surface. Also, what could happen in the future? Among other things, payment, increased self-service, Covid-19, customer focus.*	
C16	***Digitalization & technologies***	*Digitalisation is strongly changing the hotel industry, especially as a result of Covid-19, so knowledge of what can be done now and in the future as a result of digitalisation and technological advances.*	
C17	***Process automation***	*The hotel industry sees strong potential in how automation could help develop different functions or processes (pricing, shifts, room distribution, utilization of customer data). Knows how automation is utilized and where these could be utilized now or in the future.*	
	Personal characteristics		
C18	**Cooperation, interaction, communication, listening and common goal**	*Common goal and long-term partnership, the ability to work together. Listen and understand the customer. Communication also works internally with the supplier.*	*Emphasis was placed on both stages. In the delivery phase, supllier is really part of the customer's team, which means that the cooperation is closer and it has to work. The common goal will be strengthened as the project progresses.*
C19	**Proactivity & activity**	*Active and challenge, for example, in decision-making situations, take things forward and suggest. Regular and proactive communication.*	*An active grip in the sales phase, especially in communication. In the delivery phase, especially proactivity and challenging the customer, for example in decision-making.*
C20	**Openness**	*Does not let to misunderstand on purpose and is open.*	
C21	**Reliability & trust**	*Does what is agreed (eg schedules). Sticks to the agreements.*	*Especially at the sales stage, not too much should be promised.*
C22	**Honesty**	*Honesty and realism about what can and cannot be done.*	*Both steps were highlighted.*
C23	**Confidence & courage**	*Dares to say own opinion and be able to admit if does not know some things.*	*At the sales stage, one needs to be able to convince in particular, and at the delivery stage, one has to dare to give own perspective on things.*
C24	**Customer orientation, helpfulness & service**	*Able to discuss things and help the client.*	
C25	**Interest, motivation & attitude**	*Interested and motivated to do a project and learn and change things for the benefit of the client.*	*In the sales phase, in particular, a genuine interest in the project and an attitude that understands the importance of the project.*
C26	**Creativity, problem-solving & ability to give examples and ideas**	*Able to give examples and ideas as well as model solutions based on previous experience and knowledge. At the same time, bring a critical look at whether things could be done differently.*	*Especially at the delivery stage, giving examples and ideas and applying different environments is important. At the point of sale, these may still be at a fairly general level.*
	Others		
D27	**Project management & systematic individuals**	*There has to be one person to lead the project and keep the job together. Others should also be organized and systematic.*	*Systematicity and organization is more important in the delivery phase, where is a need to be able to determine who is responsible for what and promote things on schedule.*
	Competence of the team as a whole	*The team must have sufficient expertise in all areas required for the project. The team works well together, even if it includes different personalities and experts.*	

APPENDIX E: HUMAN CAPITAL LIST AND GAPS – FINAL VERSION

Code	Human capital	Clarification	Sales and delivery phase differences	Importance					Self-assessment				
				On scale 0-3					On scale 0-5				
	Competence												
	Hotel industry competence			H9	H10	H11	H12	**Avg.**	H9	H10	H11	H12	**Avg.**
A1	**Hotel industry**	*Hotel industry, its policies, functions, practices, terminology and products in general. Hotel is a large entity with a variety of activities, customer focus, customer segments and emphasis on brand and visibility. It is crucial to understand these characteristics and what is their effect on business and operations. It would also be beneficial to have information about the current information systems and solutions on the market.*	*Especially crucial in sales phase, where the competence should be shown for the customer. It would be ideal to have the same level of competence and understanding in sales and delivery phases.*	3	3	3	3	3	4	4	1	2	2,8
A2	**Hotel processes**	*The competence of the business and customer service processes, such as distribution and housekeeping processes, and the links between the processes are crucial. Especially customer centricity is important in hotel industry and this should also be understood.*	*The competence is more general in sales phase but goes to deeper level in the delivery phase and is often also refined to customer specific.*	3	2	3	3	2,8	4	4	2	3	3,3
A3	**Hotel's operating environment**	*The operating environment refers to the location, market and the hotel itself as an environment. The effect of the location and competitors as well as the unique environment of the hotel and its key product (accommodation) and services & products supporting it (restaurant etc.) is necessary to understand.*	*Already in the sales phase, the hotel's operating environment and hotel segment should be recognized.*	2	3	3	2	2,5	3	4	2	3	3
A4	**Challenges and needs**	*The challenges and needs in the industry in general. The understanding of the challenges, such as Covid-19, payments and digitalization, creates better understanding of what the customer is looking for and what the supplier should offer.*	*The competence should be refined during the project to a more customer specific.*	3	3	3	3	3	3	4	2	2	2,8
Average								**2,8**					**2,9**
	Technical and system competence												
A5	**The deliverable information system**	*Supplier should know the product they are selling and delivering. How does it work, what it can do and what it cannot do? The system should be understood on technical and functional levels to be able to provide the system for the customer.*	*Competence is more general level competence in the sales phase, but the salesperson should also know the product from technical perspective or the person should have at least someone to ask for help, though the competence will refine as the project progresses.*	3	3	3	3	3	2	1	4	3	2,5
A6	**Technical environment in hotels**	*A basic understanding of the current technical environments in hotels including the information systems, integrations and architectures. Supplier should have the basic understanding of the common integrations in hotels in order to know, which integrations should be done and architectures, to be able to plant the system in the current architecture.*	*In the sales phase, understanding over the architecture and integrations should already exist , but the competence is still quite general competence about the common architectures and integrations in hotel industry. The integrations have to be listed and a preliminary architecture needs to be created. The common integrations in hotels should be known in order to define, which integrations should be done. In the delivery phase, those are discovered in detail and also implemented. The competence should be more refined to the specific customer's integrations and architecture.*	2	3	2	2	2,3	2	4	3	2	3
Average								**2,6**					**2,6**
	Customer organizational competence												
A7	**Customer organization**	*Basic competence about the company, such as, what kind of organization it is, where it operates and what is the product and business like compared to others on the market? However, too detailed information will not be beneficial for the supplier.*	*The more knowledge in sales, the better, since it helps to avoid misunderstandings. The competence of the organization is refined during the projects and not too detailed or specific information is needed in the sales phase.*	2,5	2	2	3	2,4	4	4	4	4	4
A8	**Customer organization's decision making and practices**	*Understanding and prioritizing the current practices, challenges, needs and processes of the specific organization.*	*The earlier the customer's challenges are mapped, the better. Sometimes it is good to have a deeper understanding of certain needs already at the sales stage in order to define the scope of the project. Though, several aspects will be specified as the project goes further.*	3	3	2	2	2,5	4	3	5	4	4
Average								**2,4**					**4,0**
	Combined competence												
A9	**Industry and system competence combined**	*Combining an understanding of the hotel industry, its processes and needs with the system competence is crucial in order to create solutions for the customer. Supplier should have an understanding on what is solved and how.*	*In the sales phase, not as specific competence is sufficient, such as the knowledge of the problems being solved. In the delivery phase, these problems and challenges are investigated and solved in more detailed and customer-specific level.*	3	3	3	3	3	3	4	2	3	3
A10	**Big picture**	*Understanding the customer's entity and its various components. Basically, not only looking at the system or some of the components but instead looking at the entity including the system, its components and the environment. For example, solving the entity of different processes to find the optimal solution instead of looking at only one process.*		3	3	3	3	3	3	4	3	3	3,3
Average								**3**					**3,1**

Experience															
B11	**Experience of the hotel industry**	*The project team individual's experience of hotel industry, through for example previous work experience, improves the understanding of the hotel industry, customer and the priorities, such as functional priorities. Not everyone in the team will need the experience of hotel industry, instead it is crucial that at least few people have it and they are able to translate the customers ideas to the rest of the team and have some surface for contact.*	*Important in sales and delivery phases. In sales phase it creates value if the supplier is able to show their competence and experience for the customer.*	2	2	1	3	2	4	5	0	2	2,8
B12	**Experience of similar projects**	*The experience of similar projects in the industry helps the supplier team to understand the system and its functionalities in real life and speak the same language with the customer. It also creates trust and credibility if the supplier and its individuals have done similar projects before. Preferrably the projects would be hotel industry projects, but in some cases hospitality and travelling industry projects would also be suitable.*	*The experience is important in the sales and delivery phases. In the sales phase it is important since the supplier should know what they can promise to the customer. The experience also helps to convince the customer.*	2	3	2	3	2,5	4	5	3	1	3,3
Average								**2,3**					**3,0**
Knowledge															
C13	**Common trends in business**	*Knowledge of the big picture and general trends in business through different industries. How things work in other industries and what is trending in other industries? Could those ideas be applied in hotel industry too?*	*Often needed more in sales phase than in delivery since in sales phase the scope is still open.*	3	2	2	3	2,5	4	3	3	3	3,3
C14	**Hotel industry trends**	*The knowledge of the hotel industry trends, what is happening in the industry, what is trending and what is developed at the moment and possibly in the future? One example could be the increase in self-service.*		3	3	2	3	2,8	3	4	1	2	2,5
C15	***Digitalization & technologies***	*Digitalization and technologies (e.g. automation) can improve the customer's business, processes and operations. The knowledge should be common but also hotel industry specific. Especially the Covid-19 has accelerated the digitalization in hotel industry.*		3	3	3	3	3	3	3	4	2	3
Average								**2,8**					**2,9**
Personal characteristics															
C16	**Communication, cooperation & common goal**	*Ability to work together with the client and the team, communicate effectively, listen and work towards the common goal.*	*In the delivery phase, the supplier's team is often part of customer's team and the cooperation is closer than in sales so it is even more important to be able to cooperate and communicate with others.*	3	3	2	3	2,8	4	5	4	4	4,3
C17	**Proactivity & activity**	*Active and proactive communication and proactivity in proposing ideas to the customer and challenging them.*	*Activity and proactivity in communication especially in sales is crucial. Proactivity in proposing issues and ideas especially in delivery phase is essential.*	3	3	3	3	3	4	5	4	4	4,3
C18	**Openness, trust & honesty**	*Honesty about what can and cannot be done. Ability and will to do, what is agreed.*	*Especially in the sales phase, too much should not be promised to the customer.*	3	3	3	3	3	4	5	5	4	4,5
C19	**Confidence & courage**	*One's confidence and courage to say their own opinion and admit if they do not know how to do something.*	*Especially in the delivery phase the courage to give one's own perspective on things.*	3	2	3	3	2,8	4	4	5	4	4,3
C20	**Customer orientation, helpfulness & service**	*Ability to discuss almost any issue with the customer and the will to help the customer.*		3	3	3	3	3	4	5	4	4	4,3
C21	**Interest, motivation & attitude**	*Interest and motivation towards the project and learning of it.*	*In the sales phase in particular, a genuine interest towards the project and an attitude that the project is important.*	3	3	3	3	3	4	4	4	4	4
C22	**Creativity, problem-solving & ability to give examples and ideas**	*Ability to give examples and ideas based on previous experience and knowledge to solve existing problems. At the same time, a critical perspective to find out if things could be done otherwise.*	*Especially in the delivery phase, examples and ideas and ability apply different environments are crucial. In the sales phase, these may still be at a fairly general level.*	3	3	2	3	2,8	5	4	5	3	4,3
Average								**2,9**					**4,3**
Others			*These components are not straightly a individual human capital required in the projects and will be added only as a NOTE to the final list.*										
	Project management	*The team should have project management to keep the project on track.*	*This is more important in the delivery phase, where the responsibilities need to be determined and the planned schedule needs to be followed.*	3	3	3	3	3					
	Competence of the team as a whole	*Supplier's project team should have enough competence from all of the expertise areas needed in the project. Every competence is not required from everyone instead the team competence is more essential. For example, the hotel industry competence is not required from everyone in the team. Different personalities and individuals with different strenghts allow the team to succeed.*		3	3	3	3	3					