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Is value creation creaking old audit creatures joints?

- A qualitative multiple case study of large audit firms

by

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Abstract

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Five key words: Professional service firms (PSFs), value creation, technological development, competence, audit

Purpose: The overall purpose of this thesis is to provide deeper knowledge and provide a contextual understanding of the Swedish audit domain and how PSFs manage competence and value creation due to the technological change. By investigating how the firms manage competence and value creation, the authors will examine what strategy they have used to respond to the technological change and how they ensure that their employees possess the required competence

Methodology: To address the research purpose, the study has a qualitative approach consisting of a multiple case study on PSFs.

Theoretical perspectives: The value creation process framework has been complemented with theories regarding capabilities, strategic responses and the competence set of a real time economy auditor.

Empirical foundation: The first part of the empirics is based on secondary sources mainly obtained from the case companies' websites. The second part of the empirics is based on interviews conducted with the case companies as well as an interview conducted with FAR.

Conclusions: The individual competence set has changed as the firms have highly integrated technology and have moved away from the traditional audit competence set. The technological development has facilitated the ability to share knowledge within the firms. External value creation has been increased as the technological development has influenced the audit function. The service delivery has also been expanded as the auditors provide more advisory services in the audit function. The value creation in the audit function has increased as the firms have had a proactive strategy which is inconsistent with previous studies.

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1. Introduction

This initial chapter describes how the technological development has influenced the domain of auditing. The problem discussion presents the issues audit firms are facing in a changing environment and is followed by the research purpose and the research question. Thereafter, the delimitations of the thesis are presented and lastly, the structure of the thesis is presented.

1.1 Background

The audit domain is currently in the process of change driven by several variables, such as technology, industry- and social trends and increased client demands (Kairos Future, 2013; Agnew, 2016; KPMG, 2017). Researchers and other highly involved professionals within the industry claim that the future role of the auditor will develop into something far different from the traditional role (EY n.d.a; Baer, Fornelli & Thompson, 2017). The most important variables driving this process of change are technology and digitization, where the large organizations in the industry are leading the technological change (Kairos Future, 2013; Lombardi, Bloch & Vasarhelyi, 2014). The largest actors in the industry are the Big Four firms, which consists of EY, KPMG, Deloitte and PwC (ICAS, 2017). The evolution of technology has resulted in a shifted environment for the audit firms and prior to this evolution, the environment was less complex and auditing was mainly conducted manually (IAASB 2016). As the technology has progressed, the environment has become distinctly more complex and digitization has become increasingly crucial for value creation in organizations as the audit profession is moving towards more automatization (Kairos Future, 2013).

In Sweden the audit profession became an established profession protected by law in 1944, when the Swedish government legislated a protection for the title of authorized auditors (Öhman & Wallerstedt, 2012). The purpose with auditing is to quality sign organizations' accounting and management towards third party. The auditor shall be objective and skeptical in order to make professional judgments. As an esoteric circle, auditor's objectivity and independence shall not be compromised through advisory services. (FAR n.d.a) Audit activities such as monitoring inventories, processing paperwork and drafting audit reports have become automated due to technical development (Ting & Vasarhelyi, 2017). This has allowed the auditors to focus on more complex and judgmental areas as the routine tasks are completed efficiently and timely through automatization (Lombardi, Bloch & Vasarhelyi, 2014). By using technology, auditors can for instance analyze extensive amounts of financial and non-financial data, find patterns in the data that would have been impossible for humans to identify and test all transactions (Ting & Vasarhelyi, 2017; Smith, 2016). Researchers claims that technology has made it possible to improve audit quality by increased precision and more time for audit judgment (Baer, Fornelli & Thompson, 2017; Ting & Vasarhelyi, 2017; IFAC, 2017). According to KPMG (2017), the industry has also changed due to increased client expectations, where they demand a more forward-looking view to identify

and address possible issues that the organizations might not be aware of. Organizations expects the auditor to provide insights on potential issues in order for the organization to move its business forward, even though some of the provided insights might be undesirable (KPMG, 2017).

1.2 Problematization

The audit domain is evolving due to different environmental changes such as technology and digitization. However, previous research illustrates that audit firms are lagging behind since the business environment has expanded at a faster pace than the industry, where there is a lack of adoption of new technology. (Dai & Vasarhelyi, 2016; Chan & Vasarhelyi, 2011; Smith, 2016) The changing environment has resulted in increased client expectations and a new role of auditors has emerged and the time when auditors expressed "You're in compliance. End of report" has passed by. This new role has emerged due to the technological development combined with auditors' high level of expertise, as these two factors allows the auditor to assess an organization's financial information more in-depth and to provide insights regarding potential issues for the future of the organization. (KPMG, 2017) In regard to the technological change, more advisory services in auditing have emerged and the auditors' role has changed to a more advisory role where professional judgment and professional skepticism is required (Chan & Vasarhelyi, 2011).

That being said, there is a need for audit firms to respond to these changes where auditors need to adopt technological advances in order to stay relevant (Lombardi, Bloch & Vasarhelyi, 2014; IFAC, 2017). The need for audit firms to respond to these changes is also illustrated by a survey conducted by KPMG and Forbes Insights where 93% of the respondents expressed the need for the audit firms to develop (Forbes Insights, 2015). Historically, audit firms have been characterized as reactive, where changes were a reaction to critical events such as the economic situation or scandals (Heier, Dugan & Sayers, 2005; Nogler, 2014). These critical events have driven the regulations of audit as well as the evolvement of the audit function (Öhman & Wallerstedt, 2012). Even though the industry has been reactive historically, clients request a more proactive industry as it have moved towards advisory (FAR, 2017). However, for the auditors to be able to embrace the technological advances, the audit firms need to ensure that the auditors possess the required competence to assess and implement the new technology by providing additional education and training (IFAC, 2017; Baer, Fornelli & Thompson, 2017; Lombardi, Bloch & Vasarhelyi, 2014). As the environment is constantly in change, it is increasingly important that the audit firms continuously assess whether the training is providing the employees with the necessary competences. However, a gap has been identified between the competences that auditors require in their work and the competences that they actually gain from the training. Therefore, there is a need for audit firms to improve their training and education programs and to provide them on a regular basis in order to succeed in this changing environment. (IFAC, 2017; Lombardi, Bloch & Vasarhelyi, 2014)

Although research has been conducted in the area, there is a lack of empirical contributions and previous research encourages empirical evidence to be collected regarding the current audit process that is highly influenced by technology (Lombardi, Bloch & Vasarhelyi, 2014). Furthermore, previous research also encourages to further research regarding how the profession can take advantage of the new technology and what competences that are necessary for auditors to possess in regard to the technological development (Kairos Future, 2013; Brown-Liburd, Issa & Lombardi, 2015). Løwendahl, Revang and Fosstenløkken (2001) states the importance of studying professional service firms (PSFs) as they represent extreme cases in knowledge development where the organization's ability to transform the knowledge of the employees is crucial in order to create value for clients. As mentioned previously, the environment for auditors have become more complex due to the technological development which have resulted in increased importance for digitization to create value. Løwendahl, Revang and Fosstenløkken (2001) also emphasize the need to study PSFs as they serves as a growing employer and value creator in western economies.

1.3 Research Purpose

The overall purpose of this thesis is to provide deeper knowledge and provide a contextual understanding of the Swedish audit domain and how PSFs manage competence and value creation due to the technological change. By investigating how the firms manage competence and value creation, the authors will examine what strategy they have used to respond to the technological change and how they ensure that their employees possess the required competence. Furthermore, the PSFs will be compared in order to identify possible patterns or deviations in what actions the firms have taken to address the technological change. This thesis aims to answer the following research question:

> - In the context of technological change, how are PSFs managing competence and value creation in audit?

1.4 Delimitations

This thesis is mainly delimited to the Swedish context of auditing as the primary data obtained from the interviews address auditing in the Swedish context. However, the secondary empirical data concerns the global firms and hence, some global context has been included in the thesis. Another delimitation is that the authors have decided to only address the technological change in the domain of auditing rather than other business areas provided by PSFs such as consultancy and tax. The authors decided to only include large audit firms in the study as those companies are on the forefront when it comes to technology development and thus this decision was considered as necessary in order to address the research purpose. Lastly, this thesis aims to address the audit domain rather than the sociology of the audit profession.

1.5 Outline of the Thesis

In the next chapter, the chosen methodology approach will be described. Thereafter, the analytical framework will be presented, which begins by a description of key characteristics of PSFs, followed by a description of the audit domain, the audit process and lastly, current and future competence requirements. Thereafter, theories on value creation processes in PSFs, capabilities and strategic responses and competence set for a RTE auditor will be presented. In chapter four, the empirical findings collected from the multiple case study will be presented. Chapter five is devoted to the analysis of the thesis, where the empirical findings will be analyzed in accordance to the analytical framework. In chapter six, the conclusions of the thesis will be presented. Lastly, in chapter seven, the obtained findings from the case study are discussed where the study's theoretical and practical contribution to research, limitations and further research opportunities will be presented.

2. Methodology

In this chapter the authors will present the methodological approach that was chosen in order to address the research purpose. The chapter will begin by a description of a qualitative approach and a multiple case study as the chosen research method. Thereafter, the approach for the selection of case companies will be described. The analytical framework that the thesis is based on, as well as the chosen data collection method and how the data is processed and analyzed will also be presented. Additionally, the limitations of the chosen research method will be addressed.

2.1 Qualitative Approach

The purpose of this thesis is to provide a contextual understanding of how technology has changed auditing and how PSFs manage competence and value creation due to the technological change. In order to address the purpose and the research question, a deep understanding of how the firms has interpreted and responded to the change was required to be able to identify patterns and deviations between how the firms perceives the change. For that reason, a qualitative approach was chosen as the authors considered it as the most appropriate strategy to address the research purpose. This was due to as qualitative research methods are aimed at providing a deep contextual understanding and are focused on interpretations and words, while quantitative research methods illuminates numerical methods (Bryman & Bell, 2013). Furthermore, a qualitative method is suitable when research questions aim to provide an understanding of the way groups or individuals relate to different phenomenons (Lundahl & Skärvad, 1999). In this case the authors' ambition is to examine how PSFs respond to the technological change in the domain of auditing. Another factor that differs the qualitative method from the quantitative is that a qualitative approach is characterized by a close relationship with the research subjects (Bryman & Bell, 2013), which was considered as required in this case to address the research purpose, hence the choice of a qualitative approach. Additionally, researchers have expressed the need for further empirical evidence regarding the current audit process highly influenced by technology and what competences that are necessary for auditors to possess in regard to the technological development (Lombardi, Bloch & Vasarhelyi, 2014; Kairos Future, 2013; Brown-Liburd, Issa & Lombardi, 2015). This highlights the importance of gaining a deep understanding of how PSFs manage competence and value creation in audit due to the technological change, hence the choice of a qualitative method.

The relationship between theory and empirical data is oftentimes inductive in a qualitative approach, while in a quantitative approach the relationship is usually deductive. A deductive approach implies that hypothesis are formulated based on the theoretical framework in order to test the hypothesis against the collected empirical data. The inductive approach on the other hand works in the opposite direction, meaning that the theoretical framework has been developed by the empirical findings. However, these approaches are seldom used in isolation,

instead the chosen approach usually contains some element of the other approach. (Bryman & Bell, 2013) Furthermore, this is also discussed by Scapens (2007) who discuss the role of the theory in a case study and argues that it can be considered as both an input and an output, where the role of the theory is to provide the researcher with an understanding of a particular phenomena in a specific case or cases. This thesis contains both a deductive and inductive approach, with a main emphasis on deductive approach. The thesis proceeds from a deductive approach as the authors had some parts of the theoretical framework set before collecting the empirical material, which also corresponds with Scapens (2007) who argues that theories in case studies always is an input in the beginning as the researcher needs some kind of theoretical framework to begin with in order to formulate the research problem. The authors used this framework as a foundation when constructing the interview guide. However, the empirical findings collected from the case companies, required the theoretical framework to be further developed, hence a combined deductive and inductive approach.

2.2 Multiple Case Study

There are different types of alternative research designs to consider in order to address the research purpose (Bryman & Bell, 2013). When evaluating the different research designs alternatives, the authors used the three conditions presented by Yin (2014). The three conditions consists of what kind of research question that will be addressed, whether control of behavioral events is needed and whether the focus is on contemporary or historical events (Yin, 2014). The research question of the thesis is formulated as a how-question, which implies a more explanatory view of the thesis. As our aim is to investigate how the firms currently manage competence and value creation due to the technological change, contemporary events are investigated. Lastly, as the authors intend to investigate how the firms perceive the technological change and how they manage the change, the authors have little control over these events and the outcome of the empirical material. According to Yin (2014), these answers imply that a case study is preferred to be conducted. Therefore, a case study approach was chosen as it seemed to be the most suitable approach in accordance to the conditions presented above and to address the research purpose of the thesis.

A case study can be conducted either as a single case study or as a multiple case study. There are both advantages and disadvantages with both approaches that were taken into consideration by the authors when selecting the approach. As this thesis aims to provide deeper knowledge within the audit domain and how the firms have managed the technological change, the authors evaluated a multiple case study to be preferred. A single case study could have provided deeper information regarding how a single firm has addressed the technological change, however as our ambition was to identify if any similarities and differences exists in how different PSFs have addressed the change, a multiple case study approach seemed appropriate. Furthermore, a multiple case study was also preferred as the authors were not specifically interested into a single firm, rather the ambition was to accomplish a more holistic perspective of how the firms has responded to the change. Additionally, Yin (2014) argues that multiple case studies are preferred if the researcher

possess the choice and the required resources since multiple cases provide more convincing evidence which results in a more robust study.

2.3 Selection of Cases

As the purpose of this thesis is to provide a contextual understanding of the audit domain and how PSFs manage competence and value creation due to the technological change, the Big Four firms appeared as suitable case companies, which consist of PwC, EY, Deloitte and KPMG (Ferrulo et al., 2016). The Big Four are considered as the largest actors in the industry both in Sweden and internationally. These four players have the highest market share among audit firms internationally and audit over 99 % of S&P 500, a market index which covers 500 large companies. (Civilekonomen, 2016; Pakaluk, 2017; Ferrulo et al., 2016) Furthermore, according to Lombardi, Bloch and Vasarhelyi (2014), larger companies are on the forefront when it comes to technology development and incorporating it into their organizations. That being said, the Big Four was considered as suitable case companies to address the research purpose as they are worldwide organizations that have the means to invest in innovation and technology.

In order to complement the empirical data collected from the PSFs, the authors decided to include FAR in the study, the Swedish institute for auditors, accounting consultants and tax advisors. This decision was taken in order to include an external party to the case companies who could contribute to the study by providing another perspective to the research topic as FAR plays a role in steering the profession and influencing the competence requirements.

2.3.1 Selection of Interviewees

All firms including FAR were contacted by e-mail when the authors searched for representatives from each firm to be interviewed. The authors sent out e-mails to key persons identified on each firm's webpage that was considered to have deep knowledge within the research topic and thus that could contribute to the study. In cases where the authors were not able to identify key persons on the webpages, the authors sent an e-mail to the ones that were responsible for student requests on the firm, who then forwarded the request to a person that could contribute to the thesis. However, due to the lack of replies from the other PSFs, EY and Deloitte were chosen as case companies. As mentioned previously, the authors decided to include FAR in the study, where the authors identified Dan Brännström, secretary-general at FAR as a key person that could contribute to the study. As Brännström has participated in a number of articles within the topic, the authors considered an interview to be valuable to the study as he is highly involved within the industry. This selection process is referred to as a non-probability sampling as the potential interviewees were not selected at a random basis. The way that the interviewees were approached can be seen as convenience sampling as the authors contacted potential interviewees directly through their contact information provided on their company website but in cases when key persons could not be found, an e-mail was

sent out to the ones that were responsible for student requests (Bryman & Bell, 2013). The advantages of using convenience sampling are that it is very cost efficient and the interviewees are likely to provide good insights within the chosen research area. However, in cases where it is important to collect generalizable data, a bigger random sample would be required. Moreover, the purpose of this thesis is not to present findings that can be applied to a population, but rather to unveil findings that have a direct link to the current audit function that is highly influenced by technology.

As it is essential for us to gather insights into how these PSFs manage competence and value creation due to the technological change, the authors heavily evaluated the knowledge of the interviewees before conducting the interviews. The authors considered it as highly important to conduct interviews with individuals that have worked in the audit industry at least for five years and who possess a position on management level that deal with either audit and assurance or the education at the firm. This criterion was evaluated as necessary in order to address the research purpose as since they have worked in the audit industry for at least five years and possess a position on management level, they can provide deep insights within the domain of auditing and how the firm has responded to the technological change. Furthermore, this criterion was also considered as necessary due to the fact that five years is required in order to become an authorized auditor and additionally these individuals would have witnessed a possible change in the audit domain during their career journey. These factors were considered as success criteria in order to obtain reliable data and thus provide a nuanced image of the research question.

In order to provide another perspective and complement the interview conducted with Sjöström at EY, who is in charge of the education in the business area assurance for the Nordic region, the authors interviewed Ljungström, an audit associate that have been working for EY for two years. This decision was taken as Ljungström is more involved within the audit process as Sjöström is in charge of education, and hence the interview with Ljungström was conducted in order to confirm and complement the interview with Sjöström. In order to strengthen this perspective, the authors were in contact with Deloitte to interview an individual who deal with education, but due to their busy schedule this was not possible. Furthermore, as mentioned previously, one interview was conducted with FAR. The decision of including FAR was due to the fact that the authors aimed at providing another perspective to the research topic as FAR plays a role in steering the profession and influencing the competence requirements. When selecting an interviewee at FAR, the authors evaluated Dan Brännström as suitable due to his long career journey at FAR, but also due to his deep knowledge within the research topic as he has been highly involved within articles in the area. Conclusively four interviews were held, which is outlined below.

Organization	Interviewee	Interview Type	Date	Duration
EY	Roger Sjöström, Nordic Assurance Learning Leader	Telephone	2018-04-27	60 min
EY	André Ljungström, Audit Associate	Telephone	2018-04-26	58 min
Deloitte	Birgitta Lööf, Managing Partner Audit and Assurance	Telephone	2018-04-26	58 min
FAR	Dan Brännström, Secretary-general	Telephone	2018-04-27	40 min

Table 1. Interviewees

2.4 Data Collection

2.4.1 Primary Data

The primary data that this thesis is based on consists of empirical findings collected from qualitative interviews conducted with the case companies and FAR. The reason for conducting qualitative interviews was due to the authors' ambition of generating in-depth insights from the research subjects and how they perceives the change of auditing, which would not be possible in the same extent if for instance a survey would be conducted. Furthermore, according to Bryman & Bell (2013), qualitative interviews are preferred when the researchers are interested in the interviewee's perception rather than the researchers' viewpoints, which further implies qualitative interviews to be preferred in this case.

Two types of qualitative interviews can be conducted, namely semi-structured or unstructured interviews (Bryman & Bell, 2013). The authors decided to conduct semi-structured interviews as the authors considered some kind of structure of the questions to be necessary in order to be able to compare the case companies against each other. This is also consistent with recommendations by Bryman and Bell (2013), who argues that a certain structure is required when conducting multiple case studies. When constructing the interview guide, the authors used the analytical framework as a basis in order to collect the information required to answer the research questions, which is one of the main recommendations when constructing an interview guide according to Bryman & Bell (2013). Furthermore, there are different factors to consider when constructing the interview guide. The way the questions are formulated is important to consider, for instance if the questions should be asked in an open way or in a closed way where the interviewee is provided with alternatives when responding. The authors decided to only include open questions in the interview guide rather than leading questions in order to avoid steering the interviewee in any direction. However, open questions are oftentimes very time consuming for the interviewers to process, but as the authors were

interested in the interviewees' own thoughts and interpretations of the change of auditing, the choice of only including open questions were considered as necessary. (Bryman & Bell, 2013) The interview questions are presented in Appendix 1 and Appendix 2. Before each interview was held, the authors sent out the main questions to the interviewees in order for them to be able to prepare and collect their thoughts on the topic. During the interview sub-questions were also asked, which were not included in the interview guide sent to the interviewees. This decision was made primarily to capture spontaneous thoughts and observations and thus avoid steering the interviewees in any direction. When all questions are given away before hand, the interviewees have more time to reflect upon their answers and hence think about how they and the firm that they are employed by are perceived. This could as an implication influence the result and the reliability of this study.

The interviews were conducted by telephone mainly due to geographical distance and the interviewees' time limitations. This decision provides both advantages and disadvantages that need to be taken into consideration. The main disadvantage of conducting telephone interviews is that the interviewers are not able to interpret the interviewees' body language and mimics (Bryman & Bell, 2013). Furthermore, telephone interviews create a barrier as it is more difficult to create a personal connection with the interviewee and hence open up for personal experiences to be shared. On the other hand, telephone interviews contain advantages in terms of keeping the interview focused on the topics. Furthermore, as the interviews were held over telephone and not for instance at public places, there are no distractions from the surroundings. According to Yin (2014) it is preferable to record the interviews as it ensures more accurate data collection, than taking notes during the interview. However, Yin (2014) further argues that even though it is considered as beneficial to record the interviews, they should not be recorded in certain situations, such as if the interviewee feels uncomfortable by being recorded. This situation was the case for one of the conducted interviews and for that reason it was not recorded. However, the other three interviews were recorded and transcribed in order for the authors to be able to listen to the interviews again to ensure a high reliability of the collected empirical findings in the thesis.

2.4.2 Secondary Data

The thesis is primarily based on the empirical findings collected from the interviews, however empirical secondary data obtained from the case companies has also been included in the thesis. The empirical secondary data consists of information about the case companies obtained from their websites and published newspaper articles where senior personnel from the firms have been interviewed. The purpose with the obtained empirical secondary data has been to complement and confirm the primary data collected from the interviews as the primary data mainly concerns the local firms, while the secondary data mainly concerns the global firms. The authors have decided to use a combination of different types of sources in order to improve the credibility of the thesis. This is also in line with recommendations by Yin (2014) who argues that multiple sources improves the quality of a case study as case studies using multiple sources has proven to be rated a higher quality compared to case studies that relied on single sources.

2.5 Analytical Framework

The sources that are included in the analytical framework in this thesis have been thoroughly selected in order to address the research purpose. The analytical framework is mainly based on academic journals collected from the search engines Google Scholar and LUBsearch, Lund University's library database. When the authors searched for the academic journals, keywords such as *change in audit, future of audit, PSFs, value creation, competence and strategy in a changing environment* were used. However, the framework has also been complemented with books and standards from the professional authorities. The authors have mainly used academic journals that are peer reviewed which implies that a review is performed by other researchers within the same field to assess the quality of the academic journal before it is published. This decision was taken in order to improve the credibility of the thesis.

In the theoretical framework section, included in the analytical framework, the authors have described theories on value creation processes, capabilities, strategic responses and competence. These theories have been constructed into a single framework by the authors in order to develop the framework for the research purpose. The foundation of the constructed theoretical framework is the VCPs framework by Løwendahl, Revang and Fosstenløkken (2001), however, in order to address the research purpose, the authors considered it as necessary to include the above mentioned theories. This framework is further described in the theoretical framework section. The analytical framework has been used throughout the research, where it was both used as a guide when collecting the empirical data as well as when analyzing the data.

2.6 Data Processing and Data Analysis

As mentioned previously, three out of four interviews were recorded and transcribed. When the interviews were transcribed, the authors listened to the recordings individually in order to avoid steering each other in any direction where the authors' interpretations thereafter were compared. Hence, this decision was taken to avoid errors and biases in the empirical findings and thus increase the reliability. The empirical findings were structured according to the theoretical framework constructed by the authors in order to better guide the reader and thus provide a stronger red thread and clarity when stepping into the analysis.

When it comes to the analysis of the empirical data collected, Yin (2014) presents five analysis techniques that can be used when conducting case studies. These techniques are pattern matching, explanation building, time-series analysis, logic models and lastly, cross-case synthesis. The empirical data collected from the case companies, were mainly analyzed using the techniques pattern matching and cross-case synthesis techniques. According to Yin (2014) the pattern matching technique is considered as one of the most appropriate analysis techniques to use when conducting case studies. The authors used the pattern matching technique to compare patterns identified from the empirical findings collected from the case companies according to the analytical framework presented in chapter three. Furthermore,

Yin (2014) express that the cross-case synthesis analysis technique is appropriate when conducting multiple case studies. This technique was used to compare the empirical findings from each case company against each other, in order to identify potential similarities and differences between the cases. The authors decided to once again enhance the red thread of this thesis and structured the analysis according to the constructed framework.

2.7 Limitations of Research Method

As mentioned previously, the authors evaluated a case study to be the most suitable approach to answer the research question. However, this approach also brings some limitations. According to Bryman and Bell (2013) case studies lack the ability to generalize the findings collected from the cases and the ability to apply the findings to other cases. Furthermore, as mentioned previously all the Big Four audit firms were contacted but due to lack of responses, only two case companies were examined. This is considered as a further limitation as if all the Big Four firms were examined, the findings from the thesis would be more generalizable. This is also consistent with Yin (2014) who argues that more than two cases is preferable when conducting a multiple case study as it would strengthen the findings even further.

When it comes to limitations of the conducted interviews, one main limitation is that only a few interviews were performed with the case companies, where for instance only one interview was conducted with Deloitte. This implies that it is only the interviewee's own attitude and thoughts towards the research subject that is reflected in the thesis, rather than the case company. As two interviews were conducted with EY, whereas only one interview was conducted with Deloitte, the authors obtained deeper knowledge from EY, which can have an impact on the result of this study. However, the interviews are not the only source in the empirics, instead, other secondary sources of the case companies have also been included in order to support and complement the findings from the interviews. It would have been interesting to conduct a further interview with Deloitte with an employee that possess another position, as in the case of EY, to provide different perspectives on the research topic of the thesis. However, as mentioned previously, this was not possible due to lack of responses. All of the conducted interviews were held in Swedish, which implies that the findings and the quotes had to be translated into English. This may have had implications on the reliability of the study. However the empirical data collected from the interviews was sent to the interviewees so that they could approve our interpretation and potentially add more information if they felt was necessary.

Another limitation could be that the authors have used sources in the analytical framework that are written in Swedish, where the authors had to translate the information to English. This could have an impact on the reliability in the analytical framework section. However, to address this potential issue, the authors made a conscious choice to use multiple sources in order to ensure that the information in the analytical framework was interpreted in a correct way.

2.8 Quality of Research Method

When it comes to assessing the quality of the research method, the criteria validity and reliability are oftentimes used within qualitative research. However, researchers have discussed whether qualitative research should be assessed based on the same criteria as quantitative research. Lincoln and Guba (cited in Bryman & Bell, 2013) argue for instance that qualitative research rather should be evaluated based on the criteria of trustworthiness and authenticity that correspond with the criteria in quantitative research. As this thesis has a qualitative approach, the authors decided to use the criteria presented by Lincoln and Guba, which will be presented below.

2.8.1 Trustworthiness

Four types of criteria are included within the trustworthiness criterion, which are credibility, transferability, dependability and confirmability. The criterion of credibility implies that the researchers must ensure that they have followed the recommendations that are presented and that they have reported the findings to the research subjects so they can approve the information and confirm that the researchers have understood their insights in the correct manner. The authors have followed the presented recommendations and have reported the findings to the research subjects in order to ensure the study's credibility. The criterion of transferability address whether the findings obtained from the study can be applied within other areas or situations. As this study is focused on the audit function the findings cannot be applied within other areas. However as the thesis address large PSFs, the findings might be applicable to other large firms that are characterized as PSFs. But as mentioned previously, this thesis has a case study approach, where case studies oftentimes lack the ability of generalization. The criterion of dependability emphasizes the importance for the researchers to possess a critical approach and ensures that they have explained the entire research process. The authors have constantly taken this into consideration and made sure that all choices made have been thoroughly motivated. Lastly, the criterion of confirmability implies that the authors have not allowed their own values to influence the findings and conclusions that have been obtained from the study. This has been taken into consideration by the authors as they have constantly tried to refrain from their personal values during the process of collecting and presenting the empirical findings. (Bryman & Bell, 2013)

2.8.2 Authenticity

The criterion of authenticity address different criteria that emphasizes general questions connected to the conducted research such as how the research subjects' opinions and thoughts were interpreted and other consequences revolving the execution of the study. The authors have ensured this criterion as they have reported the findings obtained from the case study to the research subjects so that they could consent to the information gathered and open up for adjustments to be made in order to provide trustworthy and reliable data. (Bryman & Bell, 2013)

3. Analytical framework

Prior to the presentation of the theoretical framework, a section introducing PSFs, the legal requirements of an audit in Sweden, followed by a description of the audit process and competence requirements will be presented. In section two, the theoretical framework will be presented, which is based on theories on value creation in PSFs, capabilities and strategic responses and competence set for a RTE Auditor. Lastly, our own constructed theoretical framework will be presented.

3.1 Professional Service Firms

Løwendahl, Revang and Fosstenløkken (2001) describe the characteristics of a PSF as being knowledge intensive in their value creation that is delivered by well-educated employees, the provided services requires a high level of professional judgment and are adapted towards the customers' needs. The employees in PSFs consists of well-educated individuals where it is crucial for the firms to attract, mobilize, develop and transform the obtained knowledge of these employees in order to create value for the clients. The authors highlight knowledge as the key resource of a PSF to create value. Employees in PSFs are generally trained in a standardized package of knowledge that is mutual to all professional in that industry and is certified by pertinent professional authority. (Løwendahl, Revang & Fosstenløkken 2001)

3.1.1 The Audit Function

PSFs carry out a lot of functions, and this thesis focus on the audit and assurance function. International Standards on Accounting (ISA) are professional standards for performing financial audit. These standards are issued by the International Auditing and Assurance Standards Board (IAASB), which is part of the International Federation of Accountants (IFAC). ISA 200 states that:

> *"The purpose of an audit is to enhance the degree of confidence of intended users in the financial statements. This is achieved by the expression of an opinion by the auditor on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework. In the case of most general purpose frameworks, that opinion is on whether the financial statements are presented fairly, in all material respects, or give a true and fair view in accordance with the framework."* (IFAC, 2010)

Furthermore, ISA 200 also states that the overall objectives of the auditor when conducting an audit are:

> *(1) "To obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, thereby enabling the auditor to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework."*

(2) "To report on the financial statements, and communicate as required by the ISAs, in accordance with the auditor's findings." (IFAC, 2010)

In the Swedish context, auditing is defined by FAR (2006) as "the auditor plan, review, make a professional judgment and comment on annual report, accounting and administration of the company, with a professional skepticism". The audit's purpose is to secure the quality of the reports regarding accounting and management towards third party, that is the organization's stakeholders. Audit creates credibility for organizations' financial and non-financial information. The objective with audit is to compile an audit report provided by the auditor who ensures the degree of assurance of the reviewed material. Auditors shall perform the audit according to generally accepted auditing practice, that is performing the audit correctly by using knowledge, experience and professional judgment. Another purpose for an auditor is to act as an advisor towards the organization as the auditor is well informed about the organization and its situation. As mentioned in the introduction, the auditor's objectivity and independence shall not be compromised through advisory services. If there is a concern with the auditor's independence, the conflict of interest is reviewed. (FAR, 2006)

To perform audit according to generally accepted auditing practice, Swedish auditors must follow the international standards issued by ISA and auditors are expected to perform their utmost to follow these international standards (Carrington, 2014). If ISA collides with Swedish law, organizations must follow the law as ISA is a standard (Carrington, 2014). Audit regulations in Sweden is mainly covered by the companies act (Aktiebolagslag) (SFS 2005:551) and the audit act (Revisionslag) (SFS 1999:1079).

3.1.2 The Audit Process

For auditors to be able to ensure the quality of the entity's financial statements, and thereafter form and express their opinion regarding the validity of the financial position and performance, they follow the audit process (Porter, Hatherly & Simon, 2014). This process implies that auditors collect and evaluate adequate audit evidence with the intention of providing their opinion. The audit process resembles in all audits, but it differs due to organization size, complexity and environmental variables (Porter, Hatherly & Simon, 2014). The audit process model can differ in terms and number of steps but the overall concept is the same. The presented audit process below (figure 1) proceeds from the audit process model by Hayes, Gortemaker and Wallage (2014).

Figure 1. The Audit Process

1. Planning

In the beginning of every audit, information regarding industry, company, legal, related party and financial background is collected. The information is then analyzed and the objective with this step is for the auditor to get to know and understand the client's organization. Risk and internal control assessment and testing procedures is performed to be able to identify areas with higher risk and thereafter plan the audit to focus on these areas in the order of determined materiality. The last procedure in the planning step is to prepare the planning memorandum and audit program. The planning memorandum shows what and how much information that is going to be reviewed, when and how it is going to be reviewed and the expected amount of time it will take. (Hayes, Gortemaker & Wallage, 2014)

2. Review

During this part of the audit process the internal controls requires to be tested as the auditor is expected to rely upon them. The tests of the internal controls ensure that the financial information system controls are in place and effective. When the tests are performed, the auditor has to determine if substantive procedures should be performed. If internal control system procedures mitigate risks effectively, the auditor has to perform less substantive testing to collect sufficient audit evidence. The substantive procedures are designed to acquire verification to the data produced by the accounting system regarding completeness, accuracy, and validity. The auditor should receive sufficient evidence through the tests of internal controls and substantive procedures to enable the auditor to make sensible conclusions. (Hayes, Gortemaker & Wallage, 2014)

3. Reporting

Before preparing the reports, the auditor should review and evaluate the conclusions made from the audit evidence, and thereafter provide her opinion on the financial information. The auditor submits reports both verbally and in writing. The reports usually contain observations and critical aspects on the internal control as well as deficiencies in internal communication and information systems. The audit report is a written report where the auditor clearly expresses her opinion of the entity's financial information. (Hayes, Gortemaker & Wallage, 2014)

3.1.3 Competence Requirements

Lee and Stone (1995) states that an auditor should possess both competence and independence, meaning the auditor should be adequately skilled, knowledgeable and experienced to complete an designated audit task, as well as being physically and mentally able to perform the audit and reports in a unprejudiced and unbiased way. They also state that there are expectations that auditors know how to audit and to perform it objectively and honestly within these prescriptions. Lee and Stone (1995) propose in their article that competence is a prior condition to independence, meaning that an auditor cannot chose to be

independent unless he is competent. Competence is therefore essential when performing audit, and will be further explored in the theoretical section.

The Swedish Inspectorate of Auditors (SIA) is the expert authority in auditing and accounting matters and is controlled by the Swedish government. Their purpose is to ensure the nations access to qualified auditors and they are responsible for providing generally accepted auditing standards and professional ethics. The Swedish competence requirements for auditors are regulated by the SIA and can be accessed in their prescriptions. To become an authorized auditor, one has to perform a theoretical and practical education of eight years in total and thereafter pass the exam provided by the SIA. The theoretical education has to be performed at a Swedish university and a bachelor degree (three years) in business administration or corresponding is required. The prescriptions for the theoretical and the practical education are illustrated in figure 2. The practical education has to be at least three years and can be supervised by either an authorized auditor or an auditor. The remaining two years can be divided between theory and practice as wished. (Revisorsinspektionen, n.d.)
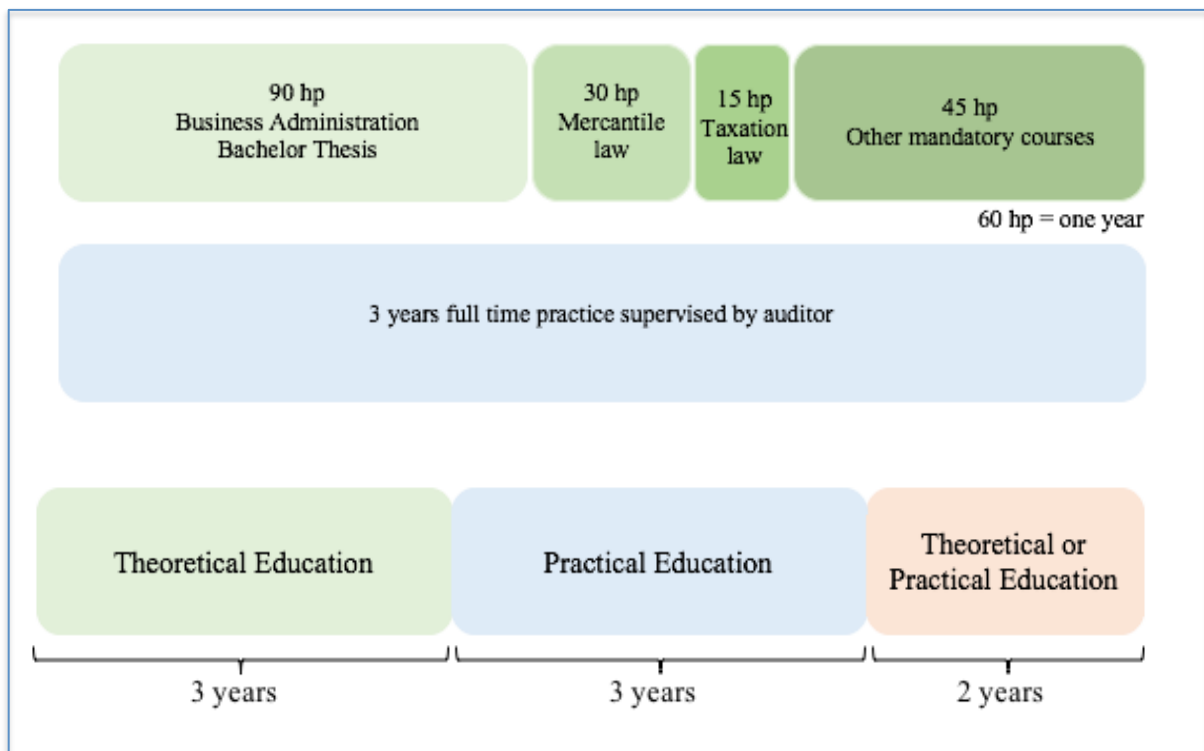
Figure 2. Education requirements

3.1.4 Future Competence Requirements in Sweden

In October 2017 the SIA sent a memorandum to the cabinet office suggesting a change in the prescriptions regarding the competence requirements. The cabinet office answered in December with a letter of referral requesting aspects and evaluation of the new constitution. The SIA responded with an enhanced memorandum a few days later but the cabinet office have not made a decision as this thesis is written (May 2018). The reason for changing the

prescriptions is according to the SIA necessary to make the education more efficient and the profession more attractive and hence improve audit quality. Conditions and expectations regarding the audit profession has changed rapidly during the last years due to fast development in technology and also due to the implementation of international regulations for auditing and accounting. The background of the proposal is after reviewing the competence requirements, the SIA concluded that the education to become an authorized auditor is longer and more complicated than most other qualified professions in Sweden. The average time to become an authorized auditor is ten years although the minimum is eight years. Another reason for submitting the proposal is that the world is changing and the SIA believe the audit profession should change along with it. Clients demand different things today than previously, they want more information about their business, particularly non-financial information. According to the SIA, businesses and society expect auditors to make use of new ways of working to make audit more efficient and less time consuming by using technology. (Revisorsinspektionen, 2017)

The proposal of new education requirements implies that the minimum time of education will be six years instead of eight. The requirement of a bachelor in business administration will be altered to a requirement of at least one bachelor in any area, however, there is still a requirement with mandatory courses in specific areas. The SIA still believe that a bachelor in business administration will be the most common bachelor for auditors if the proposal is taken. However, it will open doors for people in other industries, like information technology (IT) and law, which will broaden the knowledge within the audit profession. The requirement of two years further education in theory or practice will be removed. The proposal also have a clarification remarking that a bachelor and three year practical education is the minimum to take the exam. (Revisorsinspektionen, 2017)

3.2 Theoretical framework

3.2.1 Value Creation Processes in PSFs

Løwendahl, Revang and Fosstenløkken (2001) highlights three factors that are important to consider in order to understand the value creation process in PSFs. These factors consist of (1) *domain choice*, that touches upon the firm's prioritization of clients and projects, (2) *the resource base of the firm*, where knowledge is particularly highlighted and lastly (3) *value creation processes* (VCPs). These three factors together build the framework that is presented below. Furthermore, they discuss two components that both constrain and enable service delivery, namely domain choice and resources.

3.2.1.1 Domain Choice

The first component refers to an organization's domain, meaning what is delivered, to whom, where and how. Furthermore, the domain choice factor can also be considered at a more general level in terms of the choice of industrial context, for instance audit firms compete in

the audit industry. Domain choice is considered as a firm's most important strategic decision and is especially important for PSFs as their key strategic resource is knowledge and the employees' possessed level of knowledge is determined by the projects and clients they engage in. Hence, the choice of domain has an impact on what type of learning that takes place in the organization. Furthermore, the domain choice also influences the recruitment in terms of what type of professionals the firm can hire. Løwendahl, Revang and Fosstenløkken (2001) express the influence of domain choice in recruitment and learning as: *"A given combination of employees, processes and knowledge will support specific types of value creation in terms of what can profitably be delivered to whom and how, and certain kinds of clients, problems and processes attract particularly competent and interested professionals."*

3.2.1.2 Resources

The second component refers to an organization's resources and consists of the firm's tangibles such as finances and buildings, and intangibles such as expertise and competence. Knowledge is an intangible resource that is considered as the key resource of a PSF. Løwendahl, Revang and Fosstenløkken (2001) describe knowledge at both individual and collective level, which is outlined in table 2 below. They describe three different types of knowledge on individual level that are important in order to create value, which are fact-based, experience-based and dispositional knowledge. Knowledge at collective level is perceived as the combination of competences, routines, norms and values that are elaborated and shared among at least two employees, each employee's individual knowledge and all available information. Furthermore, the organization culture and the organization structure can have a big impact on the level of collective knowledge within the organization. (Løwendahl, Revang & Fosstenløkken, 2001)

Table I Knowledge of different types and at different levels

	Individual knowledge	*Collective knowledge*
Fact-based knowledge, 'know-what'	Facts, expertise.	'Codified knowledge' (Hansen et al., 1999), databases, information about who knows what.
Experience-based knowledge, 'know-how'	'Grey hair' (Maister, 1993); 'personalized knowledge' (Hansen et al., 1999), skills.	Norms, routines, best practices, shared 'ways of doing things', 'organizational skills' (Nelson & Winter, 1982).
Dispositional knowledge, identity	Aptitudes, talents, intelligence, etc.	Shared culture, mechanisms of socialization, unique language or code, corporate identity.

Source. Builds on and extends Kogut and Zander (1992: 388) and Lowendahl (1992: 527)

Table 2. Knowledge types (Løwendahl, Revang & Fosstenløkken, 2001)

3.2.1.3 Value Creation

The third component refers to value creation, where a PSF can create value in two different ways, (1) service delivery to its clients and (2) internally to the owners and other firm members by knowledge development. Internal value creation in knowledge development consists of three categories and can be shared in different ways (Table 2). The first category, which is fact-based knowledge, can be shared and elaborated through for instance IT systems. Secondly, the experience-based category can be shared and elaborated through social interaction, for instance through mentorship programs. Lastly, dispositional knowledge cannot be shared and elaborated, instead it can be seen as symbolically where employees learn from other employees by mimicking their behavior. When it comes to the collective level, knowledge can be improved through increased individual knowledge and competences, through shared knowledge to more individuals and through databases, routines, norms, culture etc. Regarding knowledge on firm-level, it can be improved through recruitment in terms of recruiting individuals that possess a high level of knowledge either as an extension or as a replacement of individuals that do not possess the required level of competence. (Løwendahl, Revang & Fosstenløkken, 2001)

Delivering services to the clients are considered as the core of VCP. There are two types of service delivery, namely reuse economics and expert economics. Reuse economics is defined as "a low degree of customization and involves frequent reuse of knowledge assets, large teams with a high ratio of associates to partners, and emphasis on scale and large overall revenues." Expert economics on the other hand, is defined as "high fees for highly customized solutions to unique problems, small teams with a low ratio of associates to partners and emphasis on high profit margins." Furthermore, the reuse economics focus on collective knowledge in terms of codified and fact-based knowledge, while the expert economics emphasize individual knowledge in terms of personalized and experience-based knowledge. (Løwendahl, Revang & Fosstenløkken, 2001) The VCPs framework is presented in the figure below.
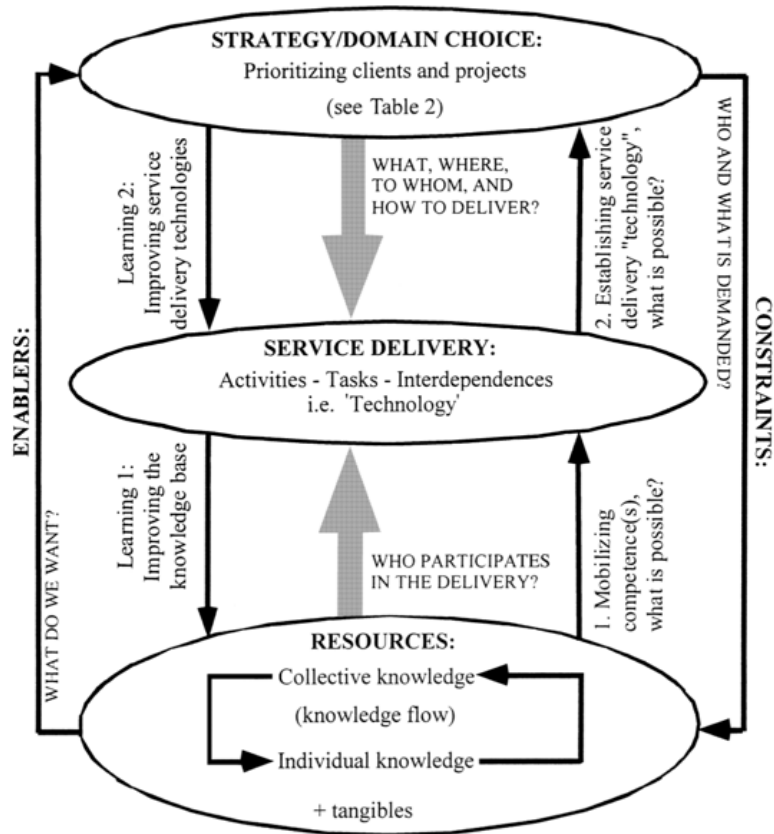
Figure 3. VCPs framework by Løwendahl, Revang & Fosstenløkken, 2001

3.2.2 Capabilities and Strategic Responses

Johnsson, Whittington and Scholes (p. 16, 2011) describe the environment organizations operate in as "*a complex political, economic, social and technological world*". These environmental factors impact almost all organizations and as the environment changes, organizations face opportunities and threats. To handle the changing environment, organizations will respond with different strategies depending on their capabilities. The capabilities refer to the organization's resources and competences, and the organization have to ensure that their capabilities are adequate to face the challenges in its environment. (Johnsson, Whittington & Scholes, 2011)

Ansoff and McDonnell (1990) define capabilities as an organization's competences, technology, facilities, equipment, shared knowledge and know-how. The capabilities generate receptiveness within the organization to anticipate external threats and opportunities (Ansoff & McDonnell, 1990). Using this knowledge, organization's prepares to face their complex and changing environment. Oliver (1991) expresses in her article regarding strategic

responses that organizations must respond to the external environment in order to survive.
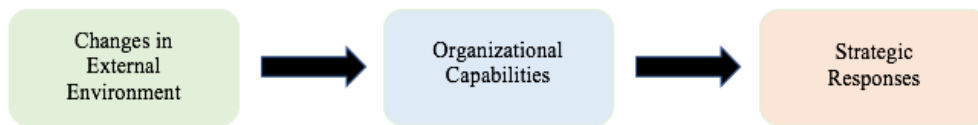

Figure 4. Strategic responses to a changing environment

The audit profession has historically been a reactive profession where changes have been a reaction to occurrences in the environment (Nogler, 2014; Heier, Dugan & Sayers, 2005). The profession has historically changed due to new demands from stakeholders or due to changes in the economic situation (Nogler, 2014; Heier, Dugan & Sayers, 2005; Öhman & Wallerstedt, 2012).

3.2.3 Competence set for a RTE Auditor

The technological evolution has evolved the real-time economy (RTE) which have and will change the way audit information is received, processed and analyzed. This change has increased the demand for auditors who possess enhanced competence and attitudes. To respond to the environmental changes, Vasarhelyi, Teeter and Krahel (2010) suggest that audit education can lead the way as the RTE need auditors to re-think the way they approach audit. Auditors must therefore be provided with training that is both sufficient enough to meet the demands of the new environment and strengthens them to embrace the rapid changes. Old techniques of reviewing and evaluating historical business information are no longer adequate to provide information to management and stakeholders. To be able to provide enhanced assurance, auditors today require a forceful set of competences. This set consist of three categories, which are *attitude, behavior* and *objective knowledge,* and are referred to as the *RTE auditor competence set*. In figure 5 below, the RTE audit environment is presented where the RTE auditor is compared with the traditional auditor. In table X the competences for the RTE auditor are presented and defined. (Vasarhelyi, Teeter & Krahel, 2010)
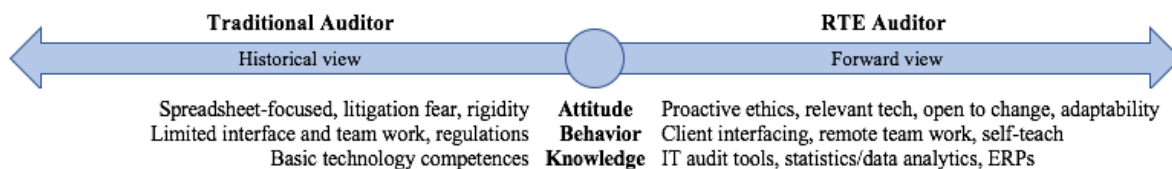

Figure 5. RTE audit environment

Attitudes

The dynamic conversion from traditional auditing to a RTE paradigm is driven by attitudes. By being exposed to problems facing the RTE, such as change management and technology adoption, future auditors are able to refine their competences and foresee situations they may come across.

Ethics: The RTE introduces new ethical dilemmas related to information provisioning, the automation of entire sub-processes, the global nature of business activities, and the emerging use of technology in the workplace.

Technology adoption: The RTE auditor must be able to evaluate technology and match capabilities and features to the needs of the audit. They should also have an attitude of constant technology discovery.

Openness toward change: The RTE auditor must possess an attitude that allows him/her to respond as the audit requirements changes. The RTE auditor must possess the ability to change their behavior. The effectiveness of audit is increased by this competence.

Behavior

Auditors are facing many changes in their behavior due to the RTE. The changes should be facilitated and encouraged by audit educators whose primary focus should be to encourage an attitude of lifelong learning.

Client interaction: Less face-to-face interaction and more remote interaction is expected in the future between auditor and client. RTE auditors also have to learn how to handle clients and team members when they are unable to meet in person.

Working with a team: Virtual teams will become the norm and RTE auditors have to know the differences between how to be successful working in a virtual team and how to be successful working in a team with physical presence.

Dealing with standard setting entities and regulations: The number of regulations will increase to meet the demands from RTE participants. RTE auditors must therefore be familiar with the latest regulations and ensure their knowledge is always up do date.

Managing the engagement: The RTE education has to address challenges faced by virtual teams as well as focus on learning complex tools.

Learning technology on the job: Understanding of key underlying accounting concepts will become more important due to rapid changes in technology and accounting standards.

Objective Knowledge

RTE auditors must understand the key concepts that support modern accounting software to enable an understanding superior to the level of office software.

Basic understanding of technology: Working with corporate IT requires a set of competences that reaches far beyond basic PC knowledge. Therefore, an RTE auditor needs an understanding of essential principles in hardware, software and business applications.

IT audit: As future audit technology develops, it will become more important to ensure that auditors possess an understanding and knowledge in automation tools and advanced software aimed at data extraction, manipulation, control evaluation, sampling, exception reporting, separation of duties, fraud detection etc.

Accounting and auditing knowledge: In the RTE the ability to intelligently seek details in databases and knowledge bases will be emphasized as factual details will be forced to be deemphasized.

Certifications: The certification authorized auditor will remain dominant but alternative certifications is increasing as a broader career path becomes available. More focus should be directed towards alternatives and complementary certifications that match the RTE auditor's interests and competences.

Table 3. The RTE auditor competence set, definitions summarized, by Vasarhelyi, Teeter and Krahel (pp. 412-414, 2010)

3.2.4 Our Theoretical Framework

The VCPs framework by Løwendahl, Revang and Fosstenløkken (2001) consist of the three factors domain choice, resources and value creation processes, which are essential to understand the value creation processes in PSFs. Furthermore, the domain choice and resource components both restrict and enable service delivery. The VCPs framework has been complemented with two theories of how organizations can respond to the changing environment by using their own capabilities. The theory about capabilities and strategic responses has been added to the framework to comprehend how PSFs respond to the changing environment. As Johnsson, Whittington and Scholes (2011) define capabilities as an organization's resources and competences, the authors have chosen to use capabilities as a heading in the framework instead of resources that is used in the VCP framework. Strategic responses has been added to the domain choice component as it also refers to the organization's strategy and address the organization's responses to a changing environment. The competence set for a RTE auditor by Vasarhelyi, Teeter and Krahel (2010) has also been added to the capability component as it describes competences valuable for future auditors where the competence set have changed as a response to the technological development. The competence set focus on individual knowledge and consist of attitudes, behavior and objective knowledge. The combination of these three theories has resulted in our theoretical framework illustrated in figure 6 below.
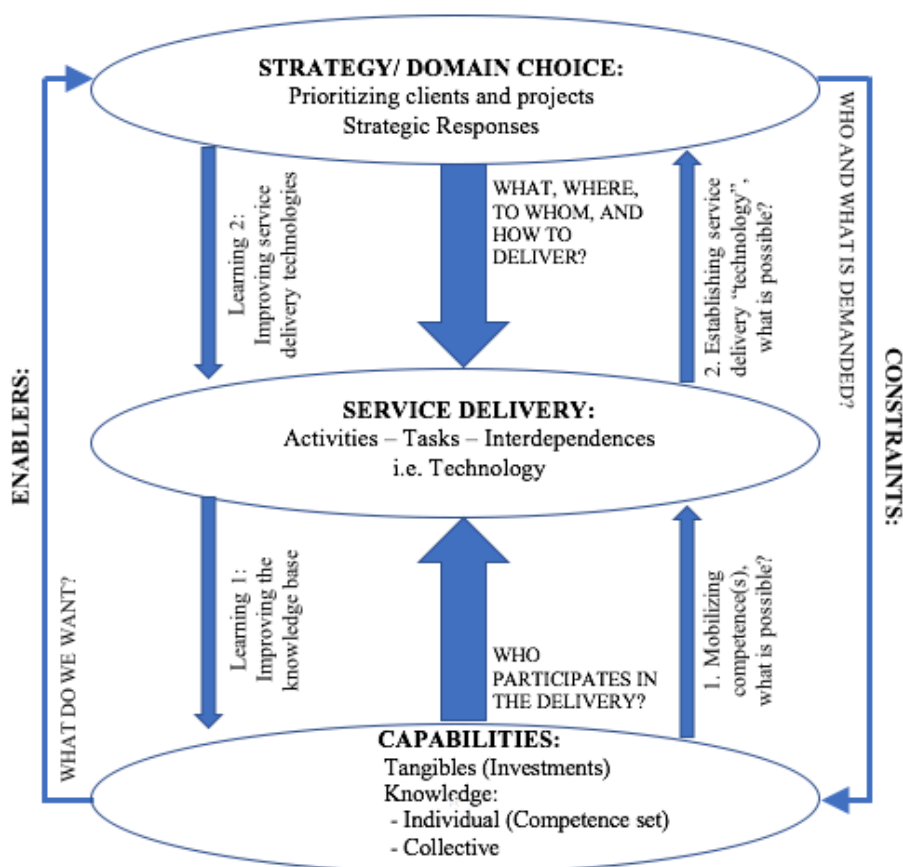

Figure 6. Our theoretical framework

4. Empirical Findings

The purpose with this chapter is to present the empirical findings collected from the case companies and FAR. The empirical findings are structured according to the theoretical framework constructed by the authors in order to better guide the reader and thus provide a stronger red thread and clarity when stepping into the analysis. Section 4.1 and 4.2 begins by an introduction of each case company which consists of secondary data obtained about the case companies in order to complement the findings from the interviews. Thereafter a short introduction about the interviewees is presented, followed by the empirical findings collected from the interviews. The information presented in the case introductions mainly concerns the global firms, while the information presented from the interviews mainly concerns the local firms. In section 4.3 FAR will be presented, which begins by a short introduction of FAR and the interviewee, followed by the empirical findings collected from the interview. Lastly, a summary of the empirical findings collected from the case companies will be presented.

4.1 PSF 1 - EY

4.1.1 Case Introduction

EY was founded in 1989 in England and has today offices in more than 150 countries. In Sweden there are around 2.700 employed and globally around 250.000 employees. (EY, n.d.b.)

4.1.1.1 Strategic Domain Choice in a Changing Environment

EY is constantly taking advantage of the latest developed technologies on the market and implements them into their audit processes. They express, that by doing so they are able to provide a high quality on their audit missions that are agile, efficient and insightful which allows them to both meet their own expectations, but also to meet the emerging needs of businesses, regulators and investors. (EY, 2017a; EY, n.d.c) EY express that their main objective with their innovation strategy and with all their investments is to enhance audit quality and will continue to develop new innovations and technologies that can be integrated into their audit process (EY, 2017a). Felice Persico, EY Global Assurance, Vice Chair, express this as:

"We innovate and invest in innovation because we are committed to building a better working world and to providing the capital markets with greater confidence, a better business perspective and enhanced transparency" (EY, 2017a).

Another strategy of EY concerns their recruitment process where EY is devoted to recruiting and attracting individuals that possess the best possible competence. They express that the technological development require the competence set to be broaden where competence

varying from auditing to IT and risk management is required today. (EY, 2015a; EY, 2015b; EY, n.d.c)

4.1.1.2 Capabilities

EY has placed huge investments in audit tools and analytics during the last three years and they have never invested such heavy amounts previously (EY, 2015a). Those investments consists of development of technologies, systems and processes as well as recruiting talented individuals to complement their existing analytics professionals and lastly, broaden their analytics solution and IP development team (EY, 2015a). EY Canvas, EY Helix and EY Atlas is examples of technologies that EY has placed huge investments in and serves as the three foundational tools used in the audit process (EY, 2017a; EY, n.d.c). EY Canvas is a global audit platform that serves as a central tool in the audit process as it connects the clients directly to the auditors. Furthermore, the EY Canvas mobile app allows EY's employees all over the world to be connected with the clients, which allows them to support the clients on distance. EY Helix is a data analytics tool that is integrated into the audit process and enables EY to provide their clients with deeper observations.

When it comes to the development of EY Canvas and EY Helix, improved automation has been considered as a key component as it allows the audit process to become more efficient due to the integration of robotics process automation (RPA). In order to implement RPA across the organization, EY has constructed an Automation Center of Excellence that consists of a team of Automation engineers and Process consultants. (EY, 2017a) Furthermore, a survey conducted by EY towards their employees, concluded that the tools EY Canvas and EY Helix help their audit teams to improve their understanding of the clients and the risks and to provide enhanced audits overall (EY, n.d.c). Lastly, EY Atlas is a cloud-based platform that ensures that EY is up-to-date regarding the latest accounting and auditing content (EY, 2017a). EY is constantly improving and updating these three tools in order to provide their auditors with the best possible tools in the audit process (EY, n.d.c).

EY has also taken the initiative to introduce other innovations such as AI and machine learning, drone technology and blockchain (EY, 2017a; EY, n.d.c). In the area of AI, EY has examined how AI can be used in the audit process and they are incorporating AI into their business both by adding AI to their current procedures but also by trying to identify new work procedures where AI is used to develop those new procedures (EY, 2017a; EY, n.d.d). They have also digitized extensive amounts of unstructured data and integrated machine learning to support revenue and leases contract reviews (EY, 2017a). Furthermore, EY has also implemented a global proof of concept (POC) with the purpose of expanding the use of drones when performing inventory observations. EY express that in the POC project the latest technology will be used in order to enhance the accuracy of inventories and thus improve the audit quality. (EY, 2017d) Blockchain is another area EY has placed much effort in (EY, 2017c). They have introduced EY Blockchain Analyzer which consists of a number of blockchain audit technologies which allows them to execute an in-depth review of

cryptocurrency business transactions. The purpose with the implementation of EY Blockchain Analyzer is to facilitate the work of the auditors by supporting the audit teams when they conduct audits for companies that are using cryptocurrencies. The technique support the auditors when collecting a client's entire transaction history from multiple blockchain ledgers, where auditors then can examine the data and conduct analysis of transactions, reconciling and identifying deviations in the transactions. (EY, 2018) Jeanne Boilett, EY Global Assurance Innovation Leader express:

"As digital technology continues to advance, we are focused on developing innovative approaches to the audit process and providing confidence and trust to the capital markets. As companies are also focusing on how they embed technologies like blockchain into their financial processes, we are innovating the audit to meet their evolving needs and those of investors." (EY, 2018)

EY express that as auditing develops due to the changing environment, the competence set of auditors are changing as well and a transformation of audit cannot be completed without employees possessing the right competences (EY, 2017b; EY, 2015a). They further express that *"To provide high-quality audits, we need high-quality people"* (EY, n.d.c). Furthermore, Jeanne Boillet, EY Global Assurance Innovation Leader expressed:

"We are building more diverse teams, which we call 'suits and jeans'. This is where we want to take the best of the traditional way of working, our people's experience, expertise and knowledge, and mix that with the new generation – the 'jeans' – who are more open to doing things differently and questioning why have we been doing things a certain way." (EY, 2017b).

Boilett further express that the development of AI will not only change their work procedures in audit, it will also change their recruitment process, where new types of profiles will probably be demanded. She express that the next generation will need to possess an understanding of accounting as well as certain technological areas such as AI, blockchain and machine learning as well as possessing an understanding of how all these areas works together in a changing and more complex environment. (EY, 2017c)

EY is placing much investments in their employees in terms of improving their employees' competences in consuming analytics in the audit procedure where they have enlarged the training and education programs provided in audit analytics (EY, 2015a; EY, 2015b). Their objective with the investments in their employees is to ensure that the employees are developing their competences on a continuous basis (EY, n.d.c). They further express this as:

"This commitment underlines our conviction that the EY audit is being dramatically transformed by technology, analytics-enabled audit methods and the right talent, and EY is setting the pace in terms of how to champion it." (EY, 2015a).

4.1.2 Respondent 1

The section below will present the empirical findings gathered from the first interview with EY. This interview was conducted with Roger Sjöström, Nordic Assurance Learning Leader at EY in Sweden and the Nordic countries. His title implies that he is in charge of education in the business area assurance for the Nordic region. Sjöström has worked at EY for eight years and was an authorized auditor until January 2017, when he decided to not renew his title.

4.1.2.1 Strategic Domain Choice in a Changing Environment

The technological development has influenced how EY perform their audit, especially in terms of what kind of tools they use and today, they use completely different tools compared to previously. The tools are used to extract information from their client's ERP systems that is transferred to their own systems to be able to perform analysis based on that information. Roger Sjöström, Nordic Assurance Learning Leader at EY, express that he has seen a major change during his years at EY:

> *"When I started working at EY in 2007, we performed a small amount of analysis that was mainly focused on the client's payroll, inventory, accounts receivables and solutions we thought was smart back then. But today we speak of something totally different where we possess much more advanced tools. The development has been huge during these years, I must say."*

According to Sjöström, EY argue to be the most globally integrated audit firm compared to the other big audit firms and he confirms that they are highly globally integrated in everything they do. In order to address the technological development, EY Global has placed a lot of investments in technology, where they have especially invested heavily in analytics tools referred to as Helix and documentation tools. Sjöström express that EY works extremely global when it comes to the development of tools that they use in the audit process. All of their tools are developed by the global firm and they do not develop any tools at local level. He further express that it is highly important to benefit from the investments from the global firm so every country do not develop their own tools because it would become highly expensive. If every country or region had its own tools, the tools might not become the best tools either as it is highly expensive so if you have a global approach you can achieve economies of scale and have the possibility to create better tools he explains. EY has also introduced a Nordic hub which includes people from Sweden, Denmark, Norway and Finland. The purpose with the Nordic hub is to entirely support the audit teams with the ability to extract data from their client's ERP systems. This is an obstacle to come across as every ERP system is unique, where different systems can be highly complicated and thus difficult to extract the desired information from. Hence, the Nordic hub supports the audit team in performing data captures and when the audit team uses the information and creates the reports and analysis, the Nordic hub supports them in how they should accomplish and use the reports in the best way.

Sjöström express that EY's audit process has changed during the recent years due to the technological development where EY has added particular examination steps that include data analysis. This is referred to as Helix the Pragmatic Substantive Procedures and is substantive audit actions where EY use the Helix tools, which consists of several programs which enables them to analyze the client's information. According to Sjöström, the entire audit process is changing in line with technology. When the data is extracted from the client's ERP system, it is required already in the planning step to have a close relationship and a discussion with the client on what the audit is expected to achieve. However, the clients are not just allowing the auditors to look into their ERP systems as some clients perceives it as a risk to have things transformed into their systems without being tested by their own IT departments as it can create operational disturbance.

"Thus, this new approach to attain a close relationship with the clients and to involve everyone in the process is highly important. For instance involving both the client's IT department and our hub in order to come across on how to extract the data in the best possible way. Hence, the planning step and that dialogue becomes important."

The review step in the audit process has become more digitized due to the technological development. Instead of visiting the client a number of times and ask for several documents from the general ledger and scanned invoices when performing the sampling, they can access all information themselves. According to Sjöström, the review step has been highly influenced by technology which have changed the overall focus:

"Our focus actually becomes to perform good analysis, ask questions to the clients and still perform some test of details of course such as reviewing invoice documents and agreements. It becomes a more risk-based audit so you can focus on essential areas, reduce the risk for errors, meaning our audit risk, and then it also becomes more effective I think."

According to Sjöström, it is important for them when reporting the audit to their clients, to emphasize parts where they have used different analytics tools as it creates additional value for the clients. This is due to as they might identify areas of improvement that the clients are not always aware of, such as file maintenance, and it does not have to be an audit risk. According to Sjöström, in all three steps in the audit process, the Helix tools have enabled them to perform improved audit which create value for the clients. Even though the technological development has improved the audit process in a number of ways, Sjöström observe some risks with moving more and more towards technology within the profession. According to Sjöström, the risk is that you as an auditor lose your holistic perspective in the audit process and that you will have a zoomed out perspective.

"I believe that there is a risk that you will get lost in all the details, the different analysis and the reports, so you lose your holistic perspective in the end."

Sjöström argues that even though the technological development enables a totally new way of working, it has not influence the audit costs as the audit process effectiveness does not make

it less expensive for the clients. On the other hand, the Helix tools enables the auditors at EY to reduce their risk to draw inadequate conclusions, hence reduced audit risk as a result of the ability of accessing more information from the clients. The ability of accessing more in-depth information enables the auditors to perform better analysis and focus more on risk and essential areas. According to Sjöström, this implies almost more work from the auditors' perspective but at the same time it reduces the risk of drawing inadequate conclusions.

There has not been a major change at EY so far when it comes to the composition of their audit teams. However, Sjöström argues that the audit teams itself has changed in terms of requesting more help internally among specialists in certain areas such as requesting help from the Nordic hub that was mentioned previously. He has neither experienced any changes in clients expectations, however their expectations corresponds more with reality today due to the technological development. Sjöström argues that many clients have believed that auditors previously could detect more than they actually did, which resulted in an expectation gap.

"I believe that the clients have previously expected that we should detect more than we actually did in the traditional audit, so I believe that we can correspond with the clients' expectations in a better way and reduce the expectation gap due to the use of these new tools and reports."

Sjöström express that the profession can be seen as it has become more of an advisory role, however he emphasizes that it is highly important for auditors to think about their independence. He argues that the way the auditors present findings based on their conclusions is a way of providing the clients with some kind of advisory on an everyday basis. The auditors give the clients advices regarding identified risk areas, but it is up to the client itself to approach this, and these advices are considered to create additional value for the client. However, Sjöström also express that it is not that simple to just say that the profession has become more of an advisory role:

"I would say that the audit profession is a broad flora of questions so advisory can actually be very wide and you always have to think of your independency, which is essential even though technology is fundamental today and can help us in a number of ways."

EY is measuring their progress in the technological development in a number of ways. Sjöström express that in his role as head of education, EY is constantly following up that their employees has fulfilled the education programs that are required for the profession. To measure their practical progress in using the developed documentation tools, EY follow up on whether these documentation tools, have been downloaded and used for the audit missions, how many audit missions these documentation tools have been applied on. If the number of missions that have used the documentation tools is too low, an action must be made to improve the work procedures and the statistics. EY has not experienced any resistance from employees as a response to the technological development and Sjöström is not concerned with experiencing any resistance in the future either. Overall, there is a large number of young employees at EY who does not have any problems to adapt towards new work procedures or

methodologies. EY provides a number of education days every year where data analytics and robotics are certain education areas for older employees such as senior manager or partner, who may struggle with adapting to the new technology. The objective with these education days is to increase the use of the Helix tools. Another area within education that influence EY is the proposal of changed education requirements. EY has a very positive attitude towards the proposal as it opens up both for the industry but also for EY as an audit firm to broaden their recruitment base.

To evaluate the employees' performance EY has a process in place called LEAD where a counselor and counselee has a meeting every 90 days. The objective with the meeting is to in a structured way, go through the feedback the counselee has received from its co-workers regarding its audit missions. Furthermore, they also go through what kind of development needs the counselee has for the coming 90 days and together create activities in accordance to those needs. In order to encourage employees to obtain specialist competence, EY Global has taken the initiative this year to introduce EY badges. EY badges implies that you as an employee can apply for a badge within a specific area of competence, for instance in data visualisation. All badges consist of four levels which are bronze, silver, gold and platinum.

4.1.2.2 Capabilities

According to Sjöström, EY has placed heavy investments in technology and especially in analytics tools during the last years. Five years ago, EY Global took the initiative to a project called Audit Transformation, which consists of the development of analytic tools and documentation tools of the audit. The analytic tools are referred to as Helix and are a generic term for a number of analytics tools that EY use in the audit process. Sjöström believes that it is today more likely that an auditor has the possibility to detect fraud, as using these tools enables the auditors to detect deviations. New types of alignments have been created such as the Nordic hub mentioned previously, which is considered as a huge advantage that has been added during the recent years. The hub supports the audit teams in data capturing as it is considered as an obstacle to come across. However, the auditors have been forced to improve their competences to be able to use the new tools to provide the reports, to draw correct conclusions based on what the reports illustrates and to present the reports to the clients to provide additional value.

The most important competence for an auditor according to Sjöström is to possess knowledge in accounting, as it is the foundation both for the clients and for EY. Furthermore, he express that it is also important to understand internal control which is something that traditionally has been lacking, however it has been improved today as auditors need to comprehend their clients' ERP systems in a different way. He also express that it is highly important to understand the client's business which is fundamental in audit as it is also in that step you can identify the risks on a comprehensive level and create an understanding of the complexity.

"I think the technological development drives us to improve when it comes to understanding the clients' ERP systems and how they are composed and structured. So it is a highly

important competence that has been introduced during the latest years, but traditionally it has been a greater emphasize on audit methodology and accounting."

According to Sjöström, EY spend enormous resources on education. EY has an internal policy in place which states that every employee should have at least 120 hours of education spread out during a three years period. Furthermore, EY has a basic education plan with almost 500 hours of education during the first five years for every employee. They also provide a large number of web-based courses that can increasingly be consumed in regard to the employees' own needs. They have also integrated the Helix tools into their education programs. The employees can also obtain education to become specialists through the EY badges program described previously. A bronze badge requires 20 hours of education connected to the area you applied for and a silver, gold or platinum badge requires at least 40 hours of education. However, to receive a badge in a specific area, the employees also need to fulfill the objectives of contribution and experience. This implies that they need to have participated in certain missions where a partner can confirm that they have applied their knowledge. Furthermore, the contribution factor implies that the employees need to contribute in some way, for instance they can teach in internally held courses. Sjöström explains that the initiative of introducing EY badges is a way of sharing knowledge and expertise among employees, where they have introduced the badges in certain areas that will be highly important for the firm in the future to possess competence within.

As mentioned previously, EY has a positive attitude towards the proposition regarding new education requirements from the SIA. However, Sjöström identify one constraint with the proposal which is if they employ an individual with an engineer background, it might become a challenge for an individual with a technical background to comprehend certain areas in audit such as risk, internal control and IFRS. However, Sjöström argues that it is way too early to say, as they do not have any empirics to fall back on. He does neither believe that there will be any major changes in the practical education to become an auditor if the proposal is approved as they already cover areas such as independence, risk and internal control in their education programs. He express that they re-educate all individuals they employ when they start working at EY as audit is not covered in the education provided by the universities.

4.1.3 Respondent 2

The empirical findings collected from the second interview with EY will be presented below. This interview was conducted with André Ljungström, Audit Associate at EY. Ljungström has worked at EY for two years and started working after graduating from university.

4.1.3.1 Strategic Domain Choice in a Changing Environment

According to André Ljungström, audit associate at EY, the technological development's impact on the audit function can be described as the movement from a binder society to entirely electronic. Today, all the work occurs in electronic form by web-based databases where everyone can access the material. The audit can be conducted in a totally different way,

not only where you are located physically, but also the fact that you can perform much more data analysis with the usage of technology. Previously, samples could be conducted on five percent of the client's transactions to ensure that these were correctly performed, but today's technology enables auditors to test the entire population and view all transactions. This creates a better understanding of the client and an expectation of how the flows in the business looks like and how they should look like. Hence, it has become more of an analytical review instead of conducting samples, which has resulted in improved audit and audit evidence.

To respond to the changing environment and ensure that the firm have the right competences, Ljungström express that EY has revoked from strictly follow the requirements of certain amounts of credits in business administration. This is because they are today more interested in system scientists that possess economic courses for instance, as system scientists cannot only secure the output, but also ensure that the internal system of the client is working properly. Therefore, EY has slightly changed their recruitment process as they today are more interested in system scientists where they view it as meritorious to have a genuine interest and knowledge in technology and Excel. Ljungström further express that sharing knowledge has been emphasized highly as a response to the technological change.

Ljungström explains there have been changes in the audit process due to the technological development and it enables the auditors to identify deviations relatively fast due to the usage of the analytics tools in the planning step. These global tools are adapted locally in order to meet local requirements and regulations. The usage of these tools enables the auditors to observe deviations that the clients should improve before the actual annual report is provided. Furthermore, the usage of these tools enables auditors to possess a better overview of the audit process. Ljungström has however identified a constraint with the rapid technological change and that is the risk of auditors using the tools but not knowing how to maximally benefit from them. Ljungström also explains that the technological development has enabled the audit process to become more efficient as time consuming steps are conducted in a simplified manner by using technology. This have changed the auditors' tasks and service delivery as it enable them to spend their time on more complex areas instead of spending a lot of time entering data manually. He does however not believe that this change in the audit process has influenced the audit cost. Furthermore, the usage of technology has resulted in an increased demand on auditors as the tools allows the auditors to perform more tests in order to secure more audit evidence and ensure the quality of the financial statements.

Ljungström express that the composition of their audit teams depends entirely on what kind of client it is and the size of the client. In order to ensure data competence in the teams, EY has started to consider what kind of people that should be included in the team to ensure a mix of competence. In order to ensure that the employees possess the knowledge required by the changing environment, EY has a feedback system in place where you as an employee is provided with physical meetings on a continuous basis to discuss future development. They also have a cloud-based platform where you enter your objectives and development. Ljungström also express that their daily audit activities have changed in terms of the working

environment has become more cloud-based where everything is stored digitally instead of having physical documents. Due to the ability of performing data analysis and to test the entire population with the usage of technology, EY can create additional value for their clients, which is something they emphasize to their clients. Ljungström further express that their role as auditors is to bounce ideas with their clients, where they constantly advice the clients in new ways of performing tasks. However, he further explains that auditors have to think about their independence and cannot provide too specific advices.

Ljungström express that EY has experienced some resistance among employees due to the rapid technological development. The resistance they have experienced comes from elder colleagues that have worked at EY for a long time and thus are familiar with previous work procedures and are struggling to adapt to the technological tools. Ljunström believes the resistance among these employees is due to that they feel insecure regarding how the tools are functioning. However, Ljungström express that it is not considered as an issue:

" In the audit profession overall, the older you become in the profession, the more customer contact you have. The technological development has occured on a more junior level where manual tasks were performed. So I would say that the older employees are doing fine and they know what to receive from the tools, they just do not know how to use the tools, but then there is someone else in the team that knows."

4.1.3.2 Capabilities

EY has placed much effort in implementing technology where they have introduced specific platforms that are used globally to assemble and structure the work. They also use pre-programmed Excel which automatically presents the data in a structured way and the auditor can then analyze and interpret the output. This technique has facilitated the audit process highly and allows them a great deal of time saving. Ljungström also express that EY can create additional value for their clients by using their tools as they are able to provide their clients with information the clients are not able to extract from their systems on their own. Furthermore, the audit process has become more cloud-based, which allows the ability to stay involved without physically visit the clients as well as all documents being stored digitally. The cloud-based environment enables the employees to work from wherever they want, which has resulted in a more global job market. Ljungström further express that this new environment has resulted in that everyone is not physically present at the office all the time, as some employees work from home for instance.

EY has combined people from different places in the world with a mix of IT competence and audit competence with the purpose of developing new tools together. They have introduced different types of Artificial Intelligence centers located at a number of different places around the world. Areas receiving more focus today are cyber security and advisory and these have grown recently. The audit department is also developing innovations and has recently introduced certain awards within IT and how to handle different technological tools.

As mentioned previously, EY is today more interested in system scientists, where they value a genuine interest and knowledge in technology and Excel. However, Ljungström claims that it is not necessary for everyone to possess these competences as they work in teams where they share knowledge among each other. As acknowledged previously, EY has highly emphasized shared knowledge as a response to the rapidly changing environment. This is realized through different meetings and education programs, where different tools in the audit process are constantly under development in order to automatize certain parts of the audit process. According to Ljungström, in order to perform the data analysis that technology enables the auditors to do today, it is highly important to possess a deep knowledge and understanding about the client and its business. This is because when conducting audit, they create an expectation in the beginning of the audit process and when they have tested the entire population, they evaluate if the outcome turned out as expected. This evaluation process requires deep knowledge about the client's business. Ljungström consider the most important competences for an auditor to possess is economic understanding and the ability to understand and interact with people as you constantly work with a large number of different people. EY is providing their employees with education programs in technology in order to ensure that the employees possess knowledge in line with the rapid development. They provide the employees with education in technology in the ordinary education programs that the employees take in order to become an authorized auditor. Furthermore, they also provide education in certain areas and new tools in order to achieve specialist knowledge.

The proposal regarding new education requirements from the SIA is something that EY has discussed and has a positive attitude towards. Ljungström express that there is a lack of auditors today and something needs to be made in order to attract people to the profession. He stress that he sees positive on this proposal as it results in wider knowledge among the employees due to different educational backgrounds and allows them to attain more specialist competence. However, even though there are many advantages with the proposal, Ljungström identifies a constraint with the proposal and that is if the requirements are lowered, the appearance of the profession might decrease as anyone can become an auditor. Ljungström express that the proposal will change the practical education to become an auditor in a positive way. He stress that newly employed will probably perform increasingly advanced analysis, instead of performing simple but more time consuming tasks, which was the case previously. Today, with the usage of technology, those time consuming tasks can be performed in seconds and they can spend more time on analysis and get more insights in the audit, which Ljungström think is highly positive. According to Ljungström, he has high expectations for the future regarding the view of the profession.

4.2 PSF 2 - Deloitte

4.2.1 Case Introduction

Deloitte was founded in 1845 in England and has today offices in more than 150 countries. In Sweden there are around 1.300 employed and globally around 264.000 employees. (Deloitte, n.d.a)

4.2.1.1 Strategic Domain Choice in a Changing Environment

Deloitte has innovated and implemented several different tools recent years and their focus have been to improve audit quality and streamline audit processes by leading audit towards the future with innovative advanced technologies, AI and analytics capabilities. (Deloitte, n.d.b) They have developed and modernized their audit services to promote international cooperation (Deloitte, 2017). Deloitte also express that the demand for advisory services in audit has increased compared to previous year (Deloitte, 2017).

The quote below summarizes how Deloitte has worked to improve audit:

"Innovation is the future of audit. And for Deloitte, the future is now. We have innovated the audit by leveraging cutting edge technology, data analytics, and transformative service delivery models. Innovation means delivering high-quality audits along with deep insight and value to our clients." (Deloitte, n.d.c)

Deloitte enhance promoting their employees by elaborating individual development plans to support them in their development by giving feedback and encouragement (Deloitte, 2017). The development of audit technology has influenced the competence requirements for auditors and therefore Deloitte is recruiting broader today to diversify the competence set among their employed auditors (Forbes, 2017).

4.2.1.2 Capabilities

Joseph Ucuzoglu, CEO in the US, expressed in an interview that Deloitte have invested hundreds of million dollars in data analytics and AI (Deloitte, n.d.d). He argues that the advantages with these tools are that they gain greater coverage of the transactions, can identify risks quicker, and therefore the audit quality increases which also deliver greater value to their clients (Deloitte, n.d.d). The use of digital tools and data analysis is continuously increasing and the interest among clients is also growing, especially among larger clients (Deloitte, 2017). As mentioned previously, Deloitte has innovated and implemented several different tools recent years. One technology that Deloitte has developed is called Propel and is a cloud-based accounting and analytics service for small and medium sized organizations. Propel and Deloitte help the client with accounting, advisory, data analytics and real-time forecasting (Accountancy Age, 2016; Deloitte, n.d.b). Another investment is called Argus, which contributed to Deloitte winning the price "Audit Innovation of the Year" in 2015 at the International Accounting Bulletin Awards. Argus is a cognitive

technology that learns from human interaction and leverages advanced machine learning techniques and can automatically extract key information from digital documents. It is a computer system that is capable of performing tasks that would normally need human intelligence. (Deloitte, n.d.e) Argus is a machine-learning based tool and these types of tools can quickly analyze large amounts of documents and identify key areas of interest. Tasks that would have required days of review during the auditing can today be performed instantly. (Forbes, 2017)

They have also developed a tool called Deloitte Optix to perform analytics on full populations of big data in real-time that is driving quality and can identify outliers and give insights to the auditor. To ensure that their auditors is continuously up-to-date with current regulations, Deloitte developed a web-based application called Disclosure Analytics that improves auditor research, client insight and the risk assessment process by giving direct access to parsed SEC filings with innovative real time search and features of disclosure comparisons. (Deloitte, n.d.f) Deloitte has also invested in Blockchain which is a service they offer primarily to financial industries as it reduces process complexity, lower costs and increase transparency. Blockchain also promotes innovation, profound client relationships and grant risk to be more correctly priced. (Deloitte, n.d.g) Panos Kakoullis, Deloitte Global Audit & Assurance Business Leader, expressed in an interview with Forbes (2017):

"Dynamic technology has had an enormous impact on the profession. Thanks to new tools and resources, auditors are able to work smarter and more effectively – with each other and with clients."

4.2.2 Respondent

In the section below, the empirical findings collected from the interview with Deloitte will be presented. The interview was conducted with Birgitta Lööf, Managing Partner for Audit and Assurance. Lööf has worked at Deloitte for 34 years and is also head of Audit and Assurance for the Nordic countries.

4.2.2.1 Strategic Domain Choice in a Changing Environment

The technological development has highly influenced the audit at Deloitte during the last ten years. Around 2008, Sweden became more exposed to global companies who had started to reform their cost structure as a reaction to the financial crisis, which influenced the audit at Deloitte and other firms, Lööf explains. Deloitte started to utilize effectively and technology within the audit service. Since then, the company has worked highly structured to enter all information and data into the systems. This process of digitization has successively occurred since 2008 to become a working environment free from physical documents. Their audit service has developed towards a digitization perspective where the focus is the client's data and they can perform analytics on extensive amounts of data which demonstrates trends and deviations.

Lööf express that Deloitte have approached the changing environment with a proactive strategy as they started to prepare for the change they knew were coming about seven to eight years ago. A group of people that had a genuine interest in digitization, including Birgitta Lööf, started the transformation towards digitization and has driven it all the way. During this time period, they have implemented different initiatives and have focused on certain main areas such as data analytics and moving the audit process into their client's systems. Lööf describes this as they are making a journey together with their clients, as they share the same ambition, that is moving the audit into the systems. This transformation journey is not all about technology and digitization, it influences the entire organization and there are several aspects to consider. Lööf express that this transformation has resulted in an organizational change. Deloitte has considered several aspects such as changing the composition of teams where people with different background has joined, people who does not work at the office anymore and lastly, the work has been dispersed more evenly over the year. Lööf explains their approach as:

"Our approach to implement the transformation has been to be very transparent throughout the organization and tell the employees what type of journey we are doing, why we are doing it, how we believe it will become and what opportunities that comes with it."

Deloitte perceives this transformation as highly positive, as they can provide their clients with improved audit quality. Lööf also express that the industry will profit in the long run as the workload will be more spread out over the year, which is explained below.

The audit process has changed in several perspectives at Deloitte. One perspective is that the audit work has become more spread out over the year and the auditors do not experience as extreme peak periods as previously. Previously, the internal controls were checked manually, but today they are integrated in the systems and can be checked whenever during the year which gives 100 percent coverage. By working more spread out over the year and to check transactions on a continuous basis, the auditors can early detect deviations and bring it forth to the client. Lööf describe this as a highly positive outcome as it enables the client to change their processes and internal controls to counteract more inaccuracies.

Lööf explains that the audit quality has increased and will continue to increase. Auditors can focus on high-risk areas as the less risky areas will be automatically performed in the system. The daily audit activities has changed in the way that auditors can spend more time on complex areas as everything is now stored into the systems. Before the technological revolution, auditors worked a lot with sampling and covered only a few percent of the population but today they can test ninety percent, meaning almost full coverage which result in higher quality in the low risk areas. Lööf express that the improved quality of the audit is a huge advantage and she perceives the technological development overall as positive and cannot identify any risks related to it. Deloitte has not identified any shift in the final audit cost, but the components of the cost have changed. The cost components include, except the audit itself, development of platforms, integrating changed regulations into the systems and so forth. These components are costly which is the reason why the audit cost has not decreased.

The platforms Deloitte has implemented are developed by the global firm and configured for Swedish environment. The global platforms have to be configured to each countries regulation and then it can be implemented. Out of the technological innovations developed by Deloitte, fifty percent is developed globally, and the remaining is developed on local level. When developing new platforms, security is highly important and Lööf emphasizes that they do not handle data in insecure environments and they always send data and information between them and their clients in secure environments. In Sweden they develop their own platforms for smaller firms, and sometimes these platforms are picked up and further developed by the global firm. By listening to their clients, Deloitte evaluate how their innovations work and in what areas they are missing out.

Deloitte is also experiencing new demands from stakeholders due to the technological development. The authorities' demands have changed as they have increased their requirements due to the fact that the industry has moved towards more technology. The regulations have also become more international which implies an increased number of regulations to consider. The expectation gap that has existed between clients and audit firms has decreased. Previously clients did not know what they could expect from the auditors and they oftentimes thought they could provide more information than they actually could. As the technology has developed, it has become clearer for the clients what they can expect from the audit. The employees' demands have also changed and today they start working with more complex areas from day one.

As mentioned previously, Deloitte views the technological change as a transformation journey, that have changed and will continue to change the way they practice audit. They have identified several benefits with this, such as they have to put less effort in time consuming tasks and can instead focus on more complex tasks which also develops the employees' knowledge. Due to the technological development, they can handle more information and extensive amounts of data without any problem. They have not viewed this change as dramatic within the company as they have been aware of the change, and Deloitte had developed a clear strategy to respond to it. Their strategy has first been to digitize everything, and then develop configurations towards their different segments as these have diverse demands. During this transformation, Deloitte has communicated their strategy and driven it throughout the organization. Lööf express that the changes have generally been received very well among the employees and they have not experienced any main issues. Lööf believes this might depend on that they are an agile organization and she says:

"There is a lot remaining to be done, but so far all changes have been positively received".

Working in an industry with many young employees has eased the transformation. The young crowd at Deloitte sees the journey as exciting and interesting and does not see any barriers. However, there have been some older employees who have struggled with the changes but in these cases, Deloitte has discussed the issues the employees face and try to motivate them to be a part of the journey. Lööf emphasizes that they have driven through many changes since

the middle of 2000 which have made the organization familiar to changes and this might have eased the transformation.

The technological development has also changed how the audit teams assemble at Deloitte. Before, the teams were assembled by competence and all teams also had experts. Nowadays, Deloitte distributes the competences by dividing the employees into three different types of teams, namely core-, tech- and virtual teams. Lööf explains that the objective is to find optimal team mixes with team members with different backgrounds and these teams will be further described in the capabilities section. To ensure that their employees possess the required competences in line with the changing environment, Deloitte has an evaluation process that they continuously follow up on. In this process they review all employees' needs and if there are any gaps existing, they fill the gaps with education or change the work environment. Employees who have a different background, like technology or mathematics, have to be provided with an individual education plan depending on their needs in order to possess the competence required by the profession.

4.2.2.2 Capabilities

Deloitte has implemented several different types of technologies and they have focused on the areas data analytics and moving the internal control function into the clients' systems. Deloitte Global provides audit platforms, analytic tools and IT configurations that checks internal controls. Deloitte Sweden has developed a solution that pre-configures all transactions in the audit process. This solution is currently being developed to become more sophisticated and this is a cooperation between the Swedish and the global firm. They also use communication platforms where they for instance can communicate with their clients, clients can upload data and information and they can create different groups in secure zones. The technological development has also resulted in more standardized processes at Deloitte. They perform more of the audit within their client's system instead of extracting the data and uploading it into their own system. There is more focus on their client's internal controls that is integrated in their system as the ERP-system has become more sophisticated.

As mentioned previously, the technological development has influenced the way the audit teams are assembled at Deloitte, where the teams previously were assembled by competence and complemented with experts. Lööf express that Deloitte has not experienced a change in competence, it is rather a division of the competences. Today they value people with different backgrounds highly and their objective is to mix the teams with individuals who perform team tasks at the client with individuals that prefer to go deep into data analysis that are not interested in client contact. Therefore the traditional role of the auditor will be complemented by other roles with more technical background and technical competence. As mentioned earlier, the employees can be divided into three different teams, and these are core-, tech-, and virtual teams. The core team is similar to the traditional audit team who is present at the client's location and is in charge of the more complex problems where judgment is the main focus. Furthermore, other employees who have a different background than audit, that are

performing tasks related to technology and tests the client's systems for instance are included in the tech team. The third team is a virtual team that is never required to be on-sight or physically present. The virtual team has been developed due to technology and Deloitte can for instance create teams with members from different countries with broad experiences to solve a specific problem.

To ensure that their employees possess the required competence in technology, all employees participate in an education program during the first year at Deloitte, where they receive education regarding how to use the platforms and the technological innovations that Deloitte has developed. Lööf emphasizes that 80 percent of what auditors learn is induced during job training. As technology has been increasingly introduced in audit, having an interest in the client's business, processes, control systems and in technology has become more important for the auditor.

Lööf has a positive attitude towards the proposal of changed education requirement for auditors as the industry needs to broaden its talent pool. Today, Deloitte re-educate all their newly employed as they do not receive education in audit at the universities. The whole industry will benefit with a broader talent pool. Lööf does not believe that a changed education requirement will change the practical education at the Big Four firms, the smaller firms will probably be more affected. The industry is facing a constraint with regulations as these become more demanding but is not compiled to be integrated into the systems. Audit today is highly regulation oriented instead of business and risk oriented. In the future, Lööf suppose that an auditor need to be able to understand organizations, their environment and risks, processes and systems to handle the risks, the business and the business model and the risks with it. The auditor has to be a good communicator towards both clients and the team. Problem solving ability will remain important for an auditor, as well as praxis and accounting policies.

4.3 FAR

FAR is the Swedish trade association for auditors, accounting consultants, tax advisors, salary consultants and specialists and was founded in 1923. FAR's main objective is to develop the audit- and advisory industry by providing recommendations, education, books, newspaper articles and digitized products. They have approximately 5300 members, which consist of authorized auditors, authorized accounting consultants, tax advisors and salary consultants. (FAR, n.d.b) The next section will present the empirical findings collected from the interview with FAR, where their Secretary-general Dan Brännström, was interviewed. Brännström has worked as Secretary-general for 15 years and previous to this he worked at EY for 22 years as an authorized auditor and managing partner.

4.3.1 Strategic domain choice in a changing environment

Brännström express that the technological development has simplified the analysis of extensive amounts of data. Another positive aspect is that it has made the audit more efficient and more value adding for the clients as the auditor can identify deficiencies in the internal controls. FAR comprehend that the industry is just in the initial phase of the change where digitization is only the beginning. So far, the industry has digitized old working methods and many companies has changed their software. An advantage with improved analytics is that the auditor can provide better input, support and advice to their client in order for them to improve their organization. This has resulted in a more advisory role within audit, however Brännstäm emphasizes that the auditor has to stay within the boundaries of the regulations.

According to Brännström, the audit process is basically the same process as previously but today it is supported by technology. The reason for a lack of change in the process is because it is based on the IAS which has a highly traditional approach towards audit, Brännström explains. To prepare the industry for the future, FAR has conducted two future reports that has influenced and inspired the industry to make a journey to change. Brännström believe Sweden has made more than other countries to prepare the industry for the change. The firms are facing a reorganizing of their business model as they cannot continue to work in the same way as previously. The technological change is being held back by the Swedish accounting legislation as it is outdated and obstructs the reporting from becoming completely digitized. FAR is trying to overcome this barrier by enlighten the problem with the parliament and the government but the process goes slowly.

To ensure that auditors' possess the required competences relative to the changing environment, FAR has struggled with the SIA, their regulatory authority, to change the education requirements during several years. The process is ongoing and Brännström believes the decision will be made some time during the spring of 2018. He emphasizes the importance of this change for the industry to be able to recruit from a broader talent pool and that the industry will not lose ambitious people who lacks a few points in mercantile law or similar.

"Young people who study at universities usually don't know that they are going to become auditors, therefore a change in the education requirements is very important for the industry to not miss talented people who haven't studied the "right" program."

Brännström express that due to the rapid technological change, the firms' need to restructure their teams where they need to find the optimal mix of competences in their teams as one person will not be able to possess all competences. This is considered as a disadvantage as FAR want audit to remain as a recognized profession and Brännström express that the directives of becoming an auditor will become a bit fuzzy as everyone will not possess mutual education. However, Brännström emphasizes the fact that the alternative to remain with the current competence requirements is precluded.

As the technology is constantly under development and becomes more advanced and essential for audit, FAR believes that the industry will require an increased level of education within technology. Therefore they are currently having a dialog with universities to begin adapting towards the new situation where the objective is to induce the students to early show interest in advanced analysis. Even though the technological development has facilitated the audit process in a number of ways, Brännström also identifies a constraint with the risk of audit becoming too technology oriented. The danger is that the auditor neglects associating with its client's business, trying to understand it and meeting the employees in the organization. Brännström present a connection he thinks is interesting:

"The word audit can be connected to audition, meaning listening, and by listening auditors can make judgments. Therefore it is important to not become too technical oriented and stop listening."

4.3.2 Capabilities

According to Brännström, many companies invest more in innovation today than previously which applies to both large and small companies, and most of them will invest even heavier in the future. He explains that an area that has been influenced by the changing environment is the composition of audit teams, where people with more analytical and technical competence are required today. In order to respond to the changing environment, FAR has introduced digitized education programs, such as e-learning. However, Brännström express that as he is not too familiarized with this area, he cannot provide any deeper insights.

The most important competences for an auditor to possess are analytical ability and comprehensive view, according to Brännström. He explains that as an auditor, you have to possess the ability to broaden your visual field to understand the entire business when performing audit. If auditors do not understand the business, the business idea, the organization and where decision-making take place, then they cannot perform good audit. The auditor also needs to possess great knowledge in accounting, company law and then overall knowledge in taxation and jurisprudence. The most important competences require qualities such as curiosity and integrity and auditors have to be tough and stand up for their opinions. However, if the proposal of changed education requirements will be approved, he believes

that a typical audit competence will not be as clearly defined as today, which he considers as a disadvantage that would be constraining for the profession. Previously it has been very straightforward of what is expected regarding education and experience, but this will change as the education requirements change. Brännström also express that if the proposal is approved, the firms in the industry will have to take bigger responsibility for their practical education. This is because people with different university education will begin working in the industry, and everyone will not need the same education which implies that the firms will have to adapt the education individually to fill the education gap.

4.4 Summary of Empirical Findings

The figures below provide a summary of the empirical findings collected from the case companies. The figures present the major strategies/domain choice and capabilities. This summary was performed in order to supply a better overview of the case companies and visualize any similarities and differences between them.
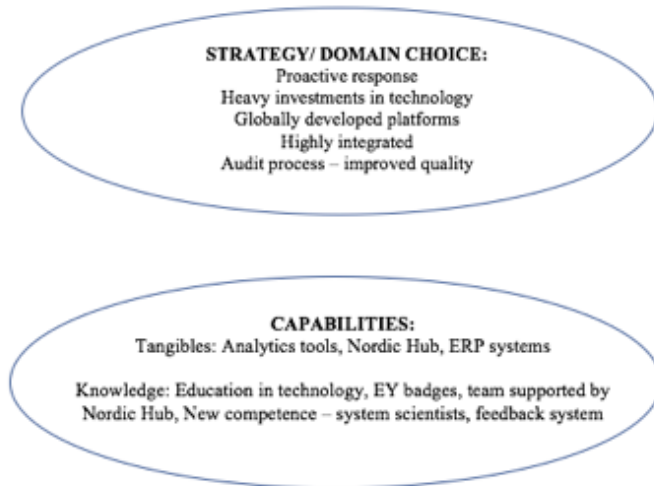
EY

STRATEGY/ DOMAIN CHOICE:
Proactive response
Heavy investments in technology
Globally developed platforms
Highly integrated
Audit process – improved quality

CAPABILITIES:
Tangibles: Analytics tools, Nordic Hub, ERP systems

Knowledge: Education in technology, EY badges, team supported by Nordic Hub, New competence – system scientists, feedback system

Figure 7. Empirical findings EY

Deloitte

STRATEGY/ DOMAIN CHOICE:
Proactive response
Heavy investments in technology
Globally and locally developed platforms
Integrated – 50 %
Audit process – improved quality

CAPABILITIES:
Tangibles: Analytics tools, ERP systems

Knowledge: Education in technology, optimal team mixes complemented with technological background, virtual teams, feedback system
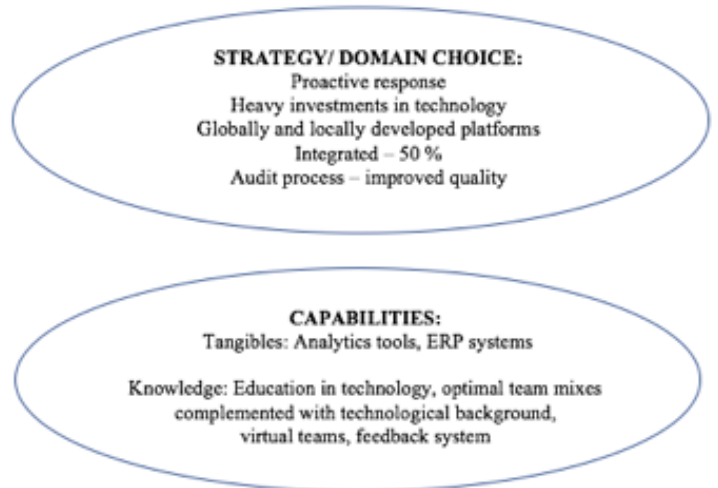
Figure 8. Empirical findings Deloitte

5. Analysis

The purpose with this chapter is to answer the research question that the thesis aims to answer by analyzing and discussing the empirical findings against the analytical framework. The chapter will present the analysis of the empirical findings regarding how PSFs are managing competence and value creation in audit, in the context of technological change. This chapter has been structured according to the theoretical framework constructed by the authors in order to better guide the reader and thus provide a stronger red thread and clarity to the answer of the research question.

5.1 Strategic Domain Choice

5.1.1 Domain Choice

The domain choice factor refers to an organization's domain which addresses the questions what is delivered, to whom, where and how. According to the empirical findings collected from the firms, it appears that all of the questions addressed in the domain choice component have changed due to the technological development, except to whom the service is delivered to. The audit firms deliver audit, assurance and advisory services to their clients, hence there has not been a change in what they deliver, it is rather the content of the service that has changed. Regarding whom the service is delivered to, there has not been a change as the firms are still delivering their audit services to the same customer segment. To address the where question, both of the firms and FAR expressed that the audit process has become more digitized, where everything is stored digitally instead of having physical documents. EY expressed that they have web-based databases where they can access all information themselves instead of visiting the clients a number of times to ask for several documents. Deloitte on the other hand, has moved the internal controls function into their clients' systems. Both firms and FAR expressed that this has resulted in the fact that the auditors do not always need to be physically present at the client's location when performing auditing as they have access to the client's systems.

The technological development has enabled the audit process to improve the ability to ensure the quality of entities' financial statement which is also the objective when following the audit process as described by Porter, Hatherly & Simon (2014). This is also in line with previous research who claims that the technological development has made it possible to improve audit quality by increased precision and more time for audit judgment (Baer, Fornelli & Thompson, 2017; Ting & Vasarhelyi, 2017; IFAC, 2017). Both of the firms expressed that the technological development have changed how audit is conducted as more technological tools such as analytics tools is used which has facilitated the audit process and provided higher audit quality and less risks. Both EY and Deloitte have implemented technological tools into their audit processes, where both of the firms have focused on the development of analytics tools. However, EY has also focused on the development of documentation tools,

whereas Deloitte has emphasized the movement of internal control into their client's systems. The audit process at EY has changed as they have added examination steps that include data analysis and the Helix tools have improved the audit process and made it more efficient. Deloitte and FAR also expressed that the audit work has become more spread out over the year, where the auditors do not experience as extreme peak periods as previously due to the technological development. Furthermore, both firms and FAR emphasized the huge opportunities of being able to analyze extensive amounts of data due to the technological development, where the auditors are today able to test an entire population rather than performing samples of the client's transactions, which was the case previously. This is also consistent with previous research by Ting and Vasarhelyi (2017) and Smith (2016) who emphasized the ability for auditors to analyze large amounts of data and identify patterns due to the technological development that would not have been possible for humans to perform.

Deloitte, EY and FAR expressed that the firms' services has also changed towards more advisory within the scope of audit as the technological development enable auditors to spend more time on complex areas rather than time consuming tasks. Deloitte has also noticed an increase in the demand for advisory services in audit. This is also consistent with previous research conducted by Lombardi, Bloch and Vasarhelyi (2014) and Chan and Vasarhelyi (2011) who argues that more advisory services in auditing has emerged due to the technological change, where the auditors' work has become more focused on complex tasks. However, both of the firms and FAR also expressed that even though it has become more of an advisory role it is highly important for the auditors to think about their independence. This corresponds with Lee and Stone (1995) who describes that independence is one of the competence requirements an auditor need to possess. Even though the firms perceives the benefits of the technological development as huge, EY and FAR have identified risks that can constrain auditing as the audit process has evolved with the technological development. EY identifies the risk that the auditors might lose their holistic perspective during the audit process as they can become too detailed oriented. FAR identifies the risk of auditors neglecting associating with its client's business, trying to understand it and meeting the employees in the organization if they become too technology oriented. Deloitte, on the other hand, did not identify any risks with moving towards more technology in the audit function. The changes in the audit process due to the technological development according to the collected empirics are illustrated in the figure below.
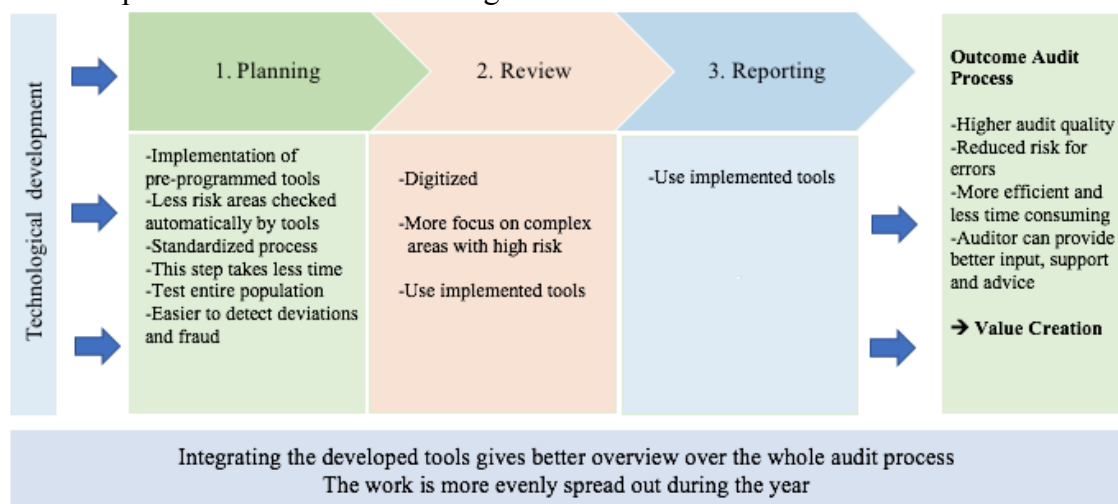

Figure 9. Changes in the audit process

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5.1.2 Strategic Responses

As concluded by Nogler (2014) and Heier, Dugan and Sayers (2005), the audit firms has historically been characterized as reactive to changes, where changes have been a reaction to occurrences in the environment. In this case study, the firms have proven to work more proactively than previous research has shown as they have planned and taken proactive actions to respond to the changing environment. EY's strategy has been to invest heavily in technology to become the market leader in technology where the global and the local firms are highly integrated. They have used a global approach as all of their innovations are developed on a global level in order to achieve economies of scale. Deloitte's overall strategy to respond to the changes has been to view it as a transformation journey which they refer to as an organizational change rather than a technological change as it influences the entire organization. This strategy corresponds with how FAR believes the changing environment will influence the firms as they express that the firms are facing a reorganizing of their business model as they cannot continue to work in the same way as previously. Deloitte's strategy has also been to invest heavily but their approach has been more local than EY's, where Deloitte's innovations are evenly developed on a global and local level.

Both Deloitte's and EY's main objective with their innovation strategies and investments have been to improve audit quality and make the audit process more efficient. EY express that they are constantly taking advantage of the latest technology and implement it to the audit process in order to meet their objective of enhanced quality, which allows them to meet the stakeholders' expectations. EY's and Deloitte's investment strategies are supported by FAR who argues that many companies invest more in innovation today than previously which applies to both large and small companies. The strategy of both companies has been to digitize everything and enter all data into the systems, where EY refers to this as "moving from a binder society to entirely electronic". FAR confirms this digitization strategy by expressing that companies have digitized old working methods. The firms' heavy investments in technology does not correspond with previous research by Dai and Vasarhelyi (2016), Chan and Vasarhelyi (2011) and Smith (2016) who argues that audit firms are lagging behind and have a lack of adoption of new technology. A reason for this might be that this case study is performed on two of the world's largest audit firms who are leading the technological change (Lombardi, Bloch & Vasarhelyi, 2014).

Both of the firms measure their progress in regard to the technological development. However, they use different approaches for it. EY is measuring their progress by constantly following up that their different target groups has fulfilled the required education programs as well as following up whether the documentation tools has been applied to the audit missions. Deloitte, on the other hand, measure their progress by taking their client's insights into consideration and thus evaluate how the innovations work and if there are any areas where Deloitte need to improve. Both of the firms ensure that their employees possess the required competence in regard to the technological change by having a feedback system in place. In this process they review the employees' development needs on a continuous basis and then create activities according to each individual's needs. Another strategy of EY is the initiative

of EY badges, which was implemented with the objective of encouraging employees to obtain specialist competence due to the technological development.

Neither of the firms have experienced any main issues of resistance among the employees due to the rapid technological change. Both of the firms expressed that the reason for why they have not faced any main issues is mainly because a large number of their employees are young and thus do not have any difficulties to adapt towards new work procedures. Deloitte also expressed that the fact that they have not experienced any main issues probably depend on that they have communicated their strategy towards the employees, have performed several organizational changes previously and that they are an agile organization. Furthermore, both of the firms also expressed that some resistance has occurred among the older employees. EY has approached this by implementing a number of education days every year where technological areas are covered such as data analytics and robotics with the objective of increasing the use of the Helix tools. Deloitte on the other hand, has approached it by discussing the issues with those employees and try to motivate them to be a part of the journey.

The technological development has influenced the competence requirements as one person can no longer possess all competences and the firms have approached this with different strategies. EY has implemented the Nordic Hub with the purpose to entirely support the audit teams with technological matters when conducting audit to accomplish an improved and efficient audit process. There has therefore not been any major change in the composition of their audit teams, the change has rather been in terms of requesting more help internally through the hub, according to Sjöström. However, according to Ljungström and the secondary data obtained from EY's webpage, EY is building more diverse teams due to the technological development, where they take the best of the traditional way of working and mix that with competences of the new generation. Deloitte's strategy has been to complement the audit teams with people with different background, such as technology, to obtain an optimal mix of competences. This is also confirmed by FAR who argues that an area that has been highly influenced by the changing environment is the composition of audit teams as other competences are required today. This change in competence requirements has also influenced the recruitment process at both firms and their strategy is to recruit and attract individuals that possess the best possible competence where broad levels of skills varying from auditing to IT and risk management are required. The firms are therefore recruiting broader today to diversify the competence set among their employed auditors. To facilitate the firms' recruitment process and thereby enable them to obtain the right competences, FAR is trying to change the SIA's competence requirements.

Deloitte and FAR argues that the technological change in audit is being held back by regulations. Deloitte express that the regulations are constraining as they become more demanding but is not compiled to be integrated into the systems and that audit is highly regulation oriented instead of business and risk oriented. FAR sees the lack of change in the audit process as it is based on IAS which has a traditional audit approach. They also believe that the technological change is constrained by the Swedish accounting legislation as it is

outdated and constrain the audit process from becoming entirely digitized. FAR is trying to overcome this constraint by enlighten the problem with the parliament and the government but the process goes slowly. This implies that audit is being constrained by regulations which implies that the firms cannot act as proactive as they want to.

The firms' are also experiencing new demands from stakeholders due to the technological development. EY express that the usage of technology has resulted in increased requirements on auditors as the tools allows the auditors to perform more tests in order to secure more audit evidence. Deloitte express that they are experiencing increased requirements from authorities as they have become more demanding but also from employees who expects to work with more complex tasks early on. The current changes in the audit function are therefore driven by new demands from stakeholders which is compatible with previous research (Nogler, 2014).

5.2 Capabilities

5.2.1 Knowledge and Competence

5.2.1.1 Individual Level

Vasarhelyi, Teeter and Krahel (2010) emphasize the need for the RTE auditor to possess knowledge and an understanding in technology as future audit technology develops. This is consistent with the findings obtained from this case study as both of the firms expressed that as technology has been increasingly introduced into the audit function, a genuine interest and knowledge within technology is highly important for an auditor to possess, which they ensure by providing their employees with education programs in technology. Furthermore, both of the firms also emphasized the need for an auditor to possess an understanding of the client's business and processes and to understand internal control. This is also supported by FAR who argues that an auditor need to possess the ability to understand a client's entire business, which serves as the foundation in order to perform good audit. EY also expressed that they are more interested in system scientists today due to the technological development. Furthermore, both EY and FAR emphasized the need for an auditor to possess great knowledge in accounting, where FAR also further emphasized company law, taxation and jurisprudence as important areas to possess knowledge within. This is consistent with Vasarhelyi, Teeter and Krahel (2010) who argues that deep knowledge within accounting and auditing is a required competence for a RTE auditor. Another important competence that was highlighted by EY is the ability to understand and interact with people as an auditor is constantly working with a large number of people. Lastly, FAR also emphasized competences such as analytical ability, comprehensive view, curiosity and integrity as further important competences for an auditor to possess.

The auditors need to be provided with training to respond to the changing environment, where the training should be both sufficient enough to meet the demands of the new environment

and strengthens them to embrace the rapid changes (Vasarhelyi, Teeter and Krahel, 2010). This is also consistent with IFAC (2017), Baer, Fornelli and Thompson (2017) and Lombardi, Bloch and Vasarhelyi (2014), who argues that the audit firms need to ensure that the auditors possess the required competence to assess and implement the new technology by providing additional education and training. This corresponds with the findings obtained from this case study as both of the firms are constantly providing their employees with education programs in order to ensure that they possess the required knowledge due to the technological change. According to Vasarhelyi, Teeter and Krahel (2010) it is highly important for a RTE auditor to be able to adopt the technology, where the auditor need to be able to evaluate the technology and match it to the needs of the audit. Furthermore, they also express that the RTE auditor must possess an attitude that allows her to respond to the changes in technology. Both EY and Deloitte ensures that their employees can adopt the technology and match it to the needs of audit by providing them with education in technology on a continuous basis, where both firms integrate their tools that are used in the audit process into the education programs. This results in the employees being familiar with the tools the firm has developed and can easier integrate the tools into the audit process and thus match the needs of audit with technology.

As mentioned in the section regarding strategic responses, both firms have experienced that some older employees have faced issues of adopting the technology and thus lack the ability to match the technology to the audit needs. However both firms have approached this by trying to motivate them to become part of the technological journey and do not consider it as an issue. In order to ensure that the employees can respond to the changes in technology, this is approached by both firms as they are constantly providing their employees with education in technology. EY also expressed that they are constantly taking advantage of the latest technology, which ensures that the employees are allowed to respond to the changes in technology as they are constantly using highly innovative tools. Furthermore, the organization culture can also have an impact on the attitude of responding to the technological change, where Deloitte has emphasized that they have communicated the transformation they are making and why they are doing it to all employees. They express that this has facilitated the transformation as the employees have possessed a positive attitude to the change.

Furthermore, Vasarhelyi, Teeter and Krahel (2010) also emphasize the need for a RTE auditor to learn technology on the job due to the rapid change in technology, which is consistent with Deloitte who emphasize the need for providing the auditors with training as 80 percent of what auditors learn is induced during job training. IFAC (2017) and Lombardi, Bloch and Vasarhelyi (2014) argues that as the environment is constantly in change, it is highly important for the audit firms to continuously assess whether the training is providing the employees with the required competences. Besides the education programs described earlier, both of the firms approach this by having feedback systems in place where they evaluate the employees' development needs on a continuous basis. This allows the companies to ensure that their employees learn the required knowledge in technology on the job. FAR has identified a constraint if the proposal of changed education requirements is approved and that is that the characteristics of an auditor will not be as clear as everyone will not possess a mutual and standardized education. Furthermore, EY has also identified constraints with the

proposal of changed education requirements where they expressed that if the requirements are lowered, the appearance of the profession might also decrease as everyone can become an auditor. They also expressed a further constraint which is if they employ an individual with an engineer background, it might become a challenge for that individual to possess knowledge in audit areas. FAR and Deloitte believe that if the proposal is approved, the firms have to adapt their practical education more individually as everyone will not possess the same educational background.

The authors also express the need for the RTE auditor to be familiar with the latest regulations and to ensure that their knowledge is up to-date as the number of regulations will increase (Vasarhelyi, Teeter & Krahel, 2010). They also express that the RTE auditor must possess an attitude that allows her to respond to changes in regulations. Both EY and Deloitte have implemented tools to ensure that the auditors are up-to-date on the latest regulations, where EY has implemented a tool called EY Atlas and Deloitte has implemented a web-based application called Disclosure Analytics. These tools allow the auditor to respond to changes in regulations as those tools are constantly updated on the latest regulations.

According to Vasarhelyi, Teeter and Krahel (2010) the client interaction will decrease where more remote interaction will occur between the auditor and the client. They further express that this requires the RTE auditor to possess the ability to handle clients and team members when they are unable to meet in person. This is consistent with the findings obtained from this case study as both the firms and FAR expressed that the audit process has become more digitized where the auditor do not always need to be physically present at the client's location when conducting an audit. As both firms already have adapted to this change, the auditor has probably familiarized herself to handle clients that they are unable to meet in person. However, Deloitte has taken a further step forward regarding this change as they have included virtual teams in their team structure. They express that it has been possible due to the technological development and it has allowed them to create the virtual teams independent of the members' geographical location which enables teams with broad experiences and competences.

This is also in line with Vasarhelyi, Teeter and Krahel (2010) who argues that virtual teams will become the norm where the RTE auditor need to know the difference between how to be successful working in both a virtual team and a team with physical presence. As Deloitte already has implemented a team structure that contains both virtual teams and teams with physical presence, the auditor is probably familiarized with this procedure and can differ on how to be successful in each case. Furthermore, Vasarhelyi, Teeter and Krahel (2010) emphasize the need for the RTE auditor to be provided with education that address the challenges faced by virtual teams and that focus on learning complex tools. According to the empirical findings, any education regarding challenges faced by virtual teams has not been identified for any of the firms. However, as mentioned previously, both firms provide the auditor with education programs in technology and complex tools.

The competence set also emphasize certifications for the RTE auditor, where it is argued that the certification authorized auditor will remain dominant but more focus should be directed towards alternatives and other certifications that are in line with the RTE auditor's competences (Vasarhelyi, Teeter& Krahel, 2010). According to this case study, the certification of authorized auditor still seem to be dominant, but it might be influenced if the proposal of changed education requirements will be approved as it will result in a broader talent pool where more certificates can be introduced. Lastly, Vasarhelyi, Teeter and Krahel (2010) also discuss the competence of ethics, where new ethical dilemmas will be introduced due to the emerging use of technology in the workplace. This can be resembled by the fact that both of the firms have experienced that the firms' audit services has changed towards more advisory due to the technological development. This has resulted in a new ethical dilemma as the auditors provide more services towards advisory, which is also demanded by clients, but they cannot provide too specific advices as they need to stay within their boundaries and think about their independence.

According to the discussion above, both of the firms appears to be up-to-date regarding the RTE auditor competence set as they have highly adopted the technology and remote team work, where everyone do not need to be physically present at the client's location anymore due to the technological development. Hence, both of the firms appears to have moved away from the traditional role who were not open to change and only possessed basic technology competences. This is also in line with Baer, Fornelli and Thompson (2017) who argues that the future role of the auditor will become highly different from the traditional role.

The table below presents the main findings obtained from the case companies that correspond with the RTE competence set regarding the type of competences that are required today due to the technological development.

RTE Competence Set	Firms
• Basic understanding of technology • IT audit	Genuine interest and knowledge within technology is required. Ensures by providing education in technology.
• Accounting and auditing knowledge	Deep knowledge in accounting is required.
• Technology adoption	Providing education on a continuous basis, where the technological tools are highly integrated.
• Learn technology on the job	Education programs and feedback systems allows the companies to ensure that their employees learn the required knowledge in technology on the job.
• Dealing with standard setting entities and regulations • Openness toward change	The firms have implemented tools to ensure that the auditors are up-to-date on the latest regulations, which allows the auditor to respond to changes in regulations as those tools are constantly updated on the latest regulations.
• Client interaction • Working with a team • Managing the engagement	The audit process has become more digitized where the auditor do not always need to be physically present at the client's location when conducting an audit. Included virtual teams. Provide education in technology and complex tools.

Table 4. Summary of corresponding competences

5.2.1.2 Collective Level

According to Løwendahl, Revang and Fosstenløkken (2001), knowledge at collective level is perceived as the combination of competences, routines, norms and values that are elaborated and shared among at least two employees, each employee's individual knowledge and all available information. Both firms express that the technological change has influenced the competence requirements for auditors, where they today need deeper knowledge in technology. However, both firms expressed that it is not necessary for everyone to possess that knowledge and therefore they have taken the approach to broaden their recruitment process in order to diversify the competence set among the auditors and share the knowledge among the employees. The capability of shared knowledge appears to be one of the most important capabilities for EY as they highly emphasize the need for shared knowledge as a response to the changing environment. EY has encouraged shared knowledge through a number of ways, such as meetings and education programs. They also share knowledge and expertise among the employees through the initiative of EY Badges, which allows the employees to obtain specialist competence. To obtain a badge, the employee must contribute by for instance teaching out the obtained competence on internally courses, which allows

shared knowledge. Another way of sharing knowledge is through the composition of the audit teams, where EY has a Nordic hub that shares knowledge to the audit teams in technological matters. Deloitte on the other hand, has constructed mixed teams with a combination of competence and background in order to share knowledge within the team. This is in line with Løwendahl, Revang and Fosstenløkken (2001) who argues that the organization structure can also have a big impact on the level of collective knowledge within the organization.

5.2.2 Tangible Investments

According to the empirical findings, technological investments appear to be the most important capability to respond to the changing environment for both of the firms. Both firms are investing heavily in technology to enhance the audit process. The objective with EY's innovation strategy is to enable an enhanced audit quality. Deloitte's objective with their innovations has been to improve audit quality and streamline audit processes with innovative advanced technologies, AI and analytics capabilities. EY's investments consist of developing technologies, systems and processes and they have especially focused on the development of analytics tools which have enabled auditors to perform a more qualified audit. They have developed three foundational tools named EY Canvas, EY Helix, EY Atlas which purposes is to connect the auditors to their clients, enable deeper observations and ensure that the auditors' is up-to-date with the latest regulations. EY has also developed innovations in AI, machine learning, drone technology and blockchain. To enhance technological development and the use of these innovations, EY has introduced new facilities such as Artificial Intelligence centers and the Nordic Hub. Deloitte's investments have mainly been focused on data analytics and AI. They have also invested in ERP systems to move the internal control function into their clients' systems. Deloitte has as well as EY, invested in machine learning, blockchain and tools to ensure the auditors are up-to-date with current regulations. The machine learning tool is called Argus and can analyze large amounts of data by itself. Deloitte has also developed a tool called Deloitte Optix to perform analytics on entire populations of big data in real-time which can be equalized with EY's Helix. Deloitte has also developed a cloud-based accounting and analytics service for small and medium sized organizations which provides real time analysis.

It is clear that both EY and Deloitte emphasize the importance of investing in technology to enable the firms to respond to the changing environment evoked by the technological development. EY has integrated all of their investments on a global level as all of the innovations are developed globally. EY has also expressed that they want to be the leader of the technological firms which compiles with this case study. Deloitte is not as globally integrated as EY due to the fact that they develop fifty percent of their tools on local level. However, they have expressed that they have developed and modernized their audit services to promote international cooperation which implies that they are working on becoming more integrated.

5.3 Value Creation

5.3.1 Internal Value Creation

According to Løwendahl, Revang and Fosstenløkken (2001), internal value creation in knowledge development consists of fact-based, experience-based and dispositional knowledge, where these categories of knowledge can be shared in different ways. The fact-based knowledge can be shared through for instance IT systems. Both EY and Deloitte provide their employees with education programs on a continuous basis, where the employees can obtain fact-based knowledge. Furthermore, at both EY and Deloitte, the employees obtain fact-based knowledge by using the technological tools. For instance, the employees obtain knowledge of the latest regulations by the usage of EY Atlas and Deloitte's Disclosure Analytics. Lastly, the employees at EY also obtain fact-based knowledge by fulfilling the web-based courses that can be consumed from the employees' own needs or participating in EY Badges. Secondly, the experience-based category can be shared and elaborated through social interaction, for instance through mentorship programs. At both EY and Deloitte, experience-based knowledge is shared through social interaction, where both firms share knowledge through social interaction by the way their teams are constructed. EY emphasize shared knowledge between the teams and the Nordic hub, while Deloitte has mixed people with different backgrounds in the team in order to obtain shared knowledge within the team. Furthermore, EY also share knowledge through social interaction by the initiative of EY Badges as the employee need to teach out the obtained knowledge to other employees in order to receive the badge. Lastly, the dispositional knowledge category cannot be shared and elaborated, instead it can be seen as symbolically where employees learn from other employees by mimicking their behavior. However, based on the findings collected from the case companies, the authors have not identified any evidence on dispositional knowledge development for any of the firms.

Knowledge development can also occur on firm-level, where it can be improved through recruitment in terms of recruiting individuals that possess a high level of knowledge. This is consistent with both EY and Deloitte, who expressed that they are devoted to recruiting and attracting individuals that possess the best possible competence, where they have broaden their recruitment process as a response to the rapid technological change. Furthermore, both of the firms also expressed that the talent pool will be even broader in the future if the proposal of changed education requirements will be approved, where they expressed that the whole industry will benefit from this.

5.3.2 External Value Creation

Delivering services to clients are considered as the core of the VCP in PSFs (Løwendahl, Revang & Fosstenløkken, 2001). There are two types of service delivery; reuse economics and expert economics. The audit firms in this case study are characterized as reuse economics as they frequently reuse their capabilities, have a low degree of customization as most of the audit process is standardized, emphasizes on scale and has a high ratio of associates to

partners. Both EY and Deloitte enable value creation for the clients through their strategic domain choice and capabilities. The capabilities technological tools and shared knowledge appears to be the most valuable capabilities when creating value for clients. The technological development has increased the value of the audit firms' service deliveries which is beneficial for both firms and clients as the firms gain competitive advantage and the clients receive higher quality services. The improved service delivery has influenced the competences required to perform the services, which has resulted in an improved knowledge base as the level of knowledge in PSFs is determined by their clients and projects (Løwendahl, Revang & Fosstenløkken, 2001).

The firms' strategy to approach the changing environment of responding in a proactive manner and investing heavily in technology has created great value for their clients. However, the firms' are constrained by regulations which implies less value creation for clients as the firms' cannot act as proactive as desired. This also implies that the firms' possibility of performing service delivery is restricted to the firm's capabilities and the regulations. Both EY and Deloitte expressed that the technological development has enabled the firms to increase audit quality and reduce the risks which implies greater value for the clients. The capabilities that have enabled this are mainly the tools developed by the firms as they can test entire populations, obtain deeper insights and extract information from clients systems. The audit cost for the firms' clients has not decreased as the audit process has become more efficient due to the expensive investments in technology, but it have increased the value for their clients as they receive higher audit quality for the same cost. Deloitte also identified that the integration in their clients' systems has enabled them to create value as when they check transactions on a continuous basis they can detect deviations early on. This results in the fact that the clients can change their processes and internal controls which implies a decreased risk. EY on the other hand has identified that the tools can create value for the clients as they can identify areas in need of improvement that does not have to be areas concerning the audit process.

The technological development has however forced the auditors to improve their competences which could have become a constraint for the VCP if the firms' employees did not adapt to the new competence requirements. It is important for the firms to ensure that their employees knows how to use the tools to enable value creation for their clients and fortunately, the employees have adapted to the emerged technology. This implies that the firms' have mobilized their knowledge and competences towards technology to increase their service delivery and create value. EY's and Deloitte's technological developments have enabled their service delivery to expand towards more advisory within the audit context as the tools allow the auditors to focus on more complex areas. This enables the auditors to deliver a more forward-looking view on the entity's business and create additional value to their clients. However, one constraint for the advisory service is that the auditor always has to regard her independence.

Both EY and Deloitte express that their clients' demands have not increased, which does not correspond with KPMG (2017) who argues that the client demands have increased. However,

EY and Deloitte also express that their clients' expectations corresponds better with reality as the expectation gap has decreased as a result of the technological development. This creates value for the clients as the risk of them becoming disappointed decreases which benefits the relationship between client and auditor. Even though EY and Deloitte does no explicitly express that they are not experiencing increased demands from clients, the clients' demands has however probably increased along with an improved service delivery. EY express that maintaining a good relationship with their clients is crucial to obtain allowance to extract information from the client's ERP system. This is beneficial for the VCP as the clients will perceive the service delivery as more valuable since the auditor have to behave in a professional manner. Deloitte express that they are making the transformation journey towards technology together with their clients which will presumably increase the value for their clients if Deloitte manage to maintain a good relationship with them.

6. Conclusion

The purpose of this chapter is to present the authors' conclusion by answering the research question of how PSFs manage value creation and competence in audit, in the context of technological change.

According to the findings from this case study, there has been a major change in both individual and collective competence due to the technological change. The individual competence set has changed as the firms have highly integrated technology and they have moved away from the traditional auditor competence set. The technological development has facilitated the ability to share knowledge within the firms as the work has become more digitized and less dependent on geographical location. Both of the firms emphasized shared knowledge as important due to the technological development as everyone is not able to possess all competences required in today's environment. The employees at both of the firms obtain experience-based knowledge by social interaction through how their audit teams are constructed. Furthermore, EY also expressed that the employees obtain specialist knowledge through EY Badges, which is shared among other employees.

In order to ensure that the employees possess the required competence, there is no major difference in the firms' approaches as both have education programs in technology and their developed technological tools allows the employees to obtain fact-based knowledge. Furthermore, they have feedback systems in place to view the employees' development needs on a continuous basis. This corresponds with previous research that emphasize the need for firms to continuously assess whether the training is providing the employees with the required competences due to the rapid technological change. Both firms have also created value in terms of knowledge development on firm-level, where they expressed that they are devoted to recruit individuals that possess the best possible competence and both of the firms have broaden their recruitment process as a response to the rapid technological change.

External value creation has been increased as the technological development has influenced the audit function. The firms' service delivery has improved as the audit process has become more efficient and less risky, which implies higher audit quality. The service delivery has also been expanded as the auditors provide more advisory services in the audit function, which is consistent with previous research. The value creation in the audit function has increased due to the firm's strategic domain choice. Both EY and Deloitte have responded to the technological change with a proactive strategy, where they have invested heavily in technology. This does not correspond with previous research who argues that audit firms act reactive to changes. It can also be concluded from this case study that the regulations is constraining audit rather than allowing it to evolve.

7. Discussion

The purpose with this final chapter is to provide a discussion of the findings obtained from the case study, where this study's theoretical and practical contribution to research, limitations and further research opportunities will be presented.

7.1 Contribution to Research

Practical contribution:
The overall practical contribution of this case study is that it contributes to the understanding in the context of how the audit process is changing due to the technological change and how firms have responded to the change. Furthermore, this study contributes to the discussion of what kind of competences that are required in order for firms to handle the technological change. This study also contributes to how PSFs can create value in audit services to clients and the organization in a changing environment. Previous research conducted in the area have argued that audit firms have responded to changes in a reactive manner, however this does not correspond with the findings from this study as it has proven evidence on that firms have responded to the change in a proactive manner, hence, this study also contribute to this discussion. Lastly, this study contributes to the discussion regarding that regulations could constrain rather than allow audit to evolve, where the authors further emphasize research to be conducted in this area, which is further described in section 7.3.

Theoretical contribution:
Besides the practical contributions mentioned above, this study also contributes to a theoretical perspective. The VCPs framework by Løwendahl, Revang and Fosstenløkken (2001) is useful in order to understand value creation in PSFs. However, this framework had to be complemented with other theories in order to be conformed within the context of the technological change and audit competence. This framework contributes to the theoretical perspective as it allows a more holistic perspective of value creation in PSFs in a changing environment.

7.2 Limitations

The limitations of the chosen research method have been discussed in the methodology section, however this thesis also contains limitations regarding the obtained findings. As mentioned in the methodology section, only one interview was conducted with Deloitte which resulted in more in-depth obtained information from EY compared to Deloitte, which could have an impact on the findings and the comparison of the case companies. Furthermore, the single interview with Deloitte also could have resulted in implications on the findings in terms of that only one perspective is reflected in the conclusions and hence the findings could have become biased. If a further interview was conducted as in the case of EY, it could have

strengthened the findings and facilitated the comparison between the case companies. The findings can also be biased as interviews were only conducted with three individuals and hence, those interviews only reflect those individuals perspective. Lastly, the findings in this case study lack generalizability as this study is focused on how the two case companies manage the technological change, which is the overall disadvantage with case studies.

7.3 Research Opportunities

This study address how PSFs are managing competence and value creation in audit due to the technological change, where the findings demonstrate that the audit firms have responded in a proactive manner rather than reactive which previous research emphasize. The authors emphasize further research on this area as it would have been interesting to investigate other industries that also have been characterized as reactive that are highly influenced by the rapid technological change. Furthermore, it would have also been interesting to investigate a larger sample of companies operating in the audit industry to gain further evidence regarding the RTE competence set to achieve a more generalizable result on this area. The findings from this study also demonstrated that regulations constrain rather than allow audit to evolve, where the authors consider this as a highly relevant area for further research.

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Appendices

Appendix 1

Interview guide - Auditors

Background information
- Position and areas of responsibility?
- Number of years within the company?
- Professional background?

Strategic domain choice
- How has technology changed the audit function in your firm?

- How is your firm handling the technological change?
  - Proactive or reactive?
  - What has been your strategy?

- More specifically, how has the audit process changed as a response to the technological development?
  - How have the steps in the process changed?
  - Has it influenced the cost of audit?
  - Have the audit team's composition changed? New balance?
  - How does the change affect your day-to-day audit activities?
  - Are your firm experiencing new demands from clients or other stakeholder? If yes, what type of demands?

- From a strategic level, what has your firm done to prepare for the change?
  - What do your firm think about that the profession has changed and become a more consultancy and advisory role?
  - Performance measurement
    - Do your firm have any performance measurements in place where they measure that they have taken a step forward in regard to the technological change?
  - Culture
    - How has the employees responded to the changes?
      - Acceptance or resistance?
      - Any pattern between age, position, etc.?

- Do your firm see any risks with moving towards more technology within audit?
  - The auditors' independence?

- How do your firm believe the profession will change in the future?

- Risk to disappear?

- Are there any areas where your firm can implement technology where it does not exist?

- Are there any areas where technology cannot be implemented, where traditional auditing will remain?

Capabilities
- What type of technology have you implemented?
- Investments
    - Is your firm investing more means in innovation now than previously?
    - Strategic alliances?
    - Global - local, competitive advantages

- What do your firm think about the change of competence within the profession? What kind of skills was important before?

- How do your firm ensure that the employees possess the required skills in regard to the changing environment?
    - What kind of skills do you value the most?
    - Feedback system?

- Do your firm has education and training programs in place pertaining to technology?
    - If yes, what kind of programs?
    - External? In-house?
    - Do your firm adapt the training individually?

- Have your firm discussed the possible change in education requirements?
    - What do your firm think of the new education requirements?
    - What kind of advantages and disadvantages can your firm identify?
    - How will it change the practical education?
    - How can it change the view of the profession?

- Which future skills do your firm think will be important for an auditor?

Appendix 2

Interview guide - Secretary-general FAR

Background information
- Position and areas of responsibility?
- Number of years within the company?
- Professional background?

Strategic Domain Choice
- How has technology changed the audit function in the firms?
  - What are the constraints with the change?

- How are the firms handling the change? How is FAR handling the change?
  - Proactive or reactive?
  - What kind of strategy have they used?

- More specifically, how has the audit process changed?
  - How have the steps in the audit process changed?
  - Has it influenced the cost of audit?
  - Have the audit team's composition changed? New balance?
  - Are the market experiencing new demands from stakeholders? If yes, what type of demands?

- From a strategic level, what has FAR done to prepare for the change?

  - Culture
    - How has the employees responded to the changes?
    - Acceptance or resistance?
    - Any pattern between age, position etc.?

- Do FAR see any risks with moving towards more technology within audit?
  - The auditors' independence?
  - Specific issues related to Sweden?

- What do you think about that the profession has changed and become more of a consultancy and advisory role?

- Are there any areas where audit firms can implement technology where it does not exist?

- Are there any areas where technology cannot be implemented? Where traditional auditing will remain?

- How do FAR believe the profession will change in the future?
  - Risk of disappearing?

Capabilities
- Investments
  - Do you believe that the firms are investing more means in innovation than previously?
  - Strategic alliances?
  - Global - local, competitive advantages?

- How can firms ensure that their employees possess the required skills in regard to the changing environment? Can FAR help in some way?
  - What kind of skills do you think is most important?

- How has FAR changed the education and training programs due to the technological change?

- Has it been a change in how much education audit firms expects auditors to have in technology?
  - Expectation shift in knowledge?

- Possible change in education requirements:
  - What do you think of the new education requirements?
  - What kind of advantages and disadvantages can you identify?
  - How will it change the practical education and how can it change the view of the profession?

- Which future skills do you think will be important for an auditor?