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Audit quality and partner characteristics

Partner characteristics and their impact on audit quality for the telecommunications industry in Norway

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1 Abstract

This study investigates the effect of audit partner characteristics (gender, experience, and expertise) on audit quality for audit clients in the telecommunications industry in Norway. We use two different models as our proxy for audit quality, abnormal accruals in line with Francis & Wang (2008) and abnormal accruals according to the Kothari et al. (2005). The data is collected from Proff Forvalt (proff.no), and manually from the annual accounts from Brønnøysundregistrene (brreg.no) and Finanstilsynets virksomhetsregister (finanstilsynet.no/virksomhetsregister). The sample consists of the annual accounts of 182 Norwegian companies in the telecommunications industry, and the analysis is for the financial year 2021.

We find that for our sample, only partner experience is significant where an auditor with above average experience has larger abnormal accruals, and therefore has a lower audit quality. The results for partner gender and partner expertise are insignificant in both audit quality models.

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3 Introduction

There is previous research done on different partner characteristic and audit quality for other countries, and as auditors in Norway, we wanted to look at the effect of partner characteristic on audit quality in Norway. Our research question is if the audit partner characteristics gender, experience, and expertise affect audit quality in Norway.

To investigate if audit quality is affected by partner characteristics as gender, experience and industry expertise in Norway, we choose to look at one industry to obtain a homogeneous population for our research. Since the telecommunications industry is an industry that constantly experiences a need for restructuring and face major demands for timely and efficient development of technology to meet the market's expectations and that telecommunication has its own law in Norway called “Teleloven” (Lov om telekommunikasjon, 2003), we found it interesting to investigate the audit quality in this industry for Norwegian companies for the financial year 2021.

To conduct this study, we read previous literature on the subject and calculated a proxy for audit quality using two generally accepted models for calculating audit quality in the literature, abnormal accruals according to Francis & Wang (2008) and abnormal accruals according to Kothari et al. (2005). Our sample from the telecommunications industry in Norway for 2021 consists of 182 companies. We used the proxies in a regression model and estimated audit quality using the two models, and data was collected from Proff Forvalt (proff.no) and manually from the annual accounts from Brønnøysundregistrene (brreg.no) and Finanstilsynets virksomhetsregister (finanstilsynet.no/virksomhetsregister). Based on our literature review, we hypothesize that there is an effect of partner gender, experience, and expertise on audit quality for the telecommunications industry in Norway.

Our findings are that partner gender and expertise have no effect on audit quality, and we retain the null hypothesis. Experience was not significant in the Kothari et al. model, but for the Francis & Wang model, experience was significant. There was a positive coefficient indicating that partners with an experience above average have a higher level of abnormal accruals, suggesting that a higher level of experience means a lower level of audit quality for the telecommunications industry, and for experience we reject the null hypothesis.

Our study shows that some partner characteristics can affect audit quality in Norway, but the sample size is limited, and the results could be different for a bigger sample size or a different industry in Norway. We find that more research on partner characteristics and audit quality in Norway would be interesting.

4 Literature review and hypotheses development

There are several prior empirical studies on the topic partner characteristics and audit quality. Research has been carried out on age and audit quality (Sundgren & Svanstrøm, 2014), partner-specific client importance and audit quality (Chen, Sun, & Wu, 2010), partner industry specialization and audit quality (Ittonen, Johnstone, & Myllymäki, 2015), and tenure and audit quality (Carey & Simnett, 2006). The research strongly suggest that partner characteristics are associated with audit quality (Sundgren & Svanstrøm, 2014). For instance, in China, the client importance for individual partners is affecting audit quality negatively. They find that audit failure is higher for clients that are important to individual partners (Chen, Sun, & Wu, 2010). When an auditor has a client industry specialization, the audit quality is associated with being higher (Ittonen, Johnstone, & Myllymäki, 2015). However, when the partner has a long tenure with the client, it is found that audit quality is reduced again (Carey & Simnett, 2006).

The results on partner characteristics and audit quality are mixed, different models have been used to determine audit quality, and the results are not consistent among audit quality proxies. In our master thesis, we want to investigate how audit partner gender is affecting audit quality, and if the number of years of experience and partner industry expertise has an impact on audit quality.

4.1 Gender

4.1.1 Higher audit quality

There are findings in the literature that show that female audit partners are positively associated with higher audit quality. Gul, Wu and Yang (2013) included several demographic characteristics when investigating how audit quality varies among audit partners, gender being one of the characteristics. They analyzed approximately 800 individual auditors in China between 1998 and 2009, using accounting and stock data from the China Stock Market and Accounting Research Database (CSMAR), and found significant variation in audit quality among audit partners. They found that demographic characteristics such as gender influenced audit quality. Audit teams with female audit partners increased audit quality, (Cameran, Ditillo, & Pettinicchio, 2017). Cameran, Ditillo & Pettinicchio (2017) investigate how diversity of audit teams, in terms of different mix of work assigned to staff, seniors, managers, and partners, influences audit quality for 187 non-financial listed company engagement by two of the Big 4 in Italy between 2006 and 2009. The results show that a higher percentage of females in leading positions in the audit teams increased audit quality.

Hardies, Breesch and Branson (2016) have done research on the relationship between audit quality and the presence of a female or male partner. They used 7105 financially distressed private Belgian companies in their research. To measure audit quality, they used the probability of an auditor issuing a going-concern opinion, conditional to the client's financial situation. The result of their research indicated that female audit partners provide higher audit quality than male audit partners. They conclude that female audit partners, all other things being equal, are more likely than male audit partners to issue an opinion on going concern. Karjalainen, Niskanen and Niskanen (2018) found in their research that female audit partners are more conservative compared to male audit partners when it comes to issuing a modified opinion, when a modified opinion has been issued the previous year, and when the audit partner has changed. The research was conducted on all Finnish audited companies from 2003 to 2012. Female audit partners are also more likely to disclose more key audit matters than male audit partners, and with more details (Abdelfattah, Elmahgoub, & Elamer, 2021). This is similar to empirical and experimental research on female audit partners providing higher audit quality. Abdelfattah, Elmahgoub & Elamer (2021) investigated UK companies during the years 2013 to 2017.

Another method for measuring audit quality is accruals quality, where the findings shows that partner gender is associated with the quality of financial reporting. Ittonen, Vähämaa and Vähämaa (2013) find that female audit partners have smaller abnormal accruals when they researched Finnish and Swedish NASDAQ OMX-listed companies for year 2005 to 2007. Smaller abnormal accruals are associated with higher audit quality. They also mention that the behavioral differences between females and males have important implications on audit quality.

There is more supporting research that emphasizes the existence of a gender effect on audit quality. Garcia-Blandon, Argilés-Bosch, and Ravenda (2019) find that female auditors are associated with significantly higher levels of financial reporting quality in their research on Spanish-listed companies for the period 2008 to 2015.

Another angle to look at audit quality is to measure the contagion effect of low audit quality on individual audit partners. The results indicates that female audit partners have a lower probability of audit failure and that the contagion effect on low audit quality is weakened for female audit partners (Li, Qi, Tian, & Zhang, 2017). There has also been research in the US that provides weak evidence for a positive association between female audit partners and audit quality. Lee, Nagy & Zimmerman (2019) researched the demand and supply factors associated with audit partner selection and assignment in the United States from 2004 to 2005.

Not all research supports that female audit partners have higher audit quality. Niskanen, Karjalainen and Niskanen (2011) found mixed results in their research. They found that female audit partners are more conservative when they used sub-samples of income-increasing and income-decreasing discretionary accruals, which suggests that female partners provide higher audit quality. But when they used absolute values in their regression model, they found that female partners accepted more discretion in income reporting, which speaks against female audit partners having higher audit quality than their male counterparts.

4.1.2 Low/weak audit quality

Hossain et al (2018) and Yang et al (2018) find that female auditors are associated with lower audit quality. Hossain, Chapple and Monroe (2018) did their research on Australian listed companies and used the probability of an auditor issuing a going-concern opinion as a proxy for audit quality, just like Hardies et al. (2016), but they did not get the same result. Their results shows that female audit partners are less likely to issue a going-concern opinion for financially distressed clients. Yang, Liu, and Mai (2018) found that audit quality differs significantly between genders, that male audit partners' audit quality exceeded the audit quality of female audit partners, and that audit quality for female audit partners was significantly lower than for the male audit partners.

Other research shows that there is no connection between audit partner gender and audit quality. Karjalainen, Niskanen and Niskanen (2018) find that there is no connection between audit partner gender and audit quality, as they examine the likelihood of issuing a modified report. Rehuel, Caneghem and Verbuggen (2017) find that stereotypical beliefs about males and females, like that females are academically weaker at math than males (Spencer, Steele, & Quinn, 1999), that males are more overconfident than females (Hardies, Breesch, & Branson, 2012), could not be extended to the auditor population in their research. The explanatory power of audit partner gender disappeared when self-selection bias was controlled for via propensity matching and because of socialization (Reheul, Van Caneghem, Van den Bogaered, & Verbruggen, 2017). Burke, Hoitash, and Hoitash (2019) also found no evidence of a link between audit partner gender and audit quality when they examined the overall impact of the information that became available in the United States in 2017, in connection with the PCAOB's introduction of Rule 3211. Rule 3211 is an audit partner disclosure requirement, which requires registered public accounting firms to disclose the name of the audit partner for each audit report it issues.

We want to examine how audit partner gender impact audit quality for telecommunication industry in Norway, if female audit partners have higher audit quality than male audit partners, if male audit partners have higher audit quality than female audit partners or there is no difference in audit quality between female audit partners and male audit partners in the Norwegian telecommunication industry.

Our hypothesis on audit partner gender and audit quality is formulated as follows:

$$H1_a: Audit\ partner\ gender\ has\ no\ impact\ on\ audit\ quality$$

$$H1_b: Audit\ partner\ gender\ has\ an\ impact\ on\ audit\ quality$$

4.2 Experience

4.2.1 Task-experience

Prior experimental research has focused on task-experience and task-specific knowledge (Bonner, 1990; Bonner & Walker, 1994; Libby & Frederick, 1990; Moroney & Carey, 2011), industry-specific experience (Contessotto, Knechel, & Moroney, 2021; Moroney & Carey, 2011) and client-specific experience (Contessotto, Knechel, & Moroney, 2021) and how different types of experience and knowledge impact an audit.

Bonner (1990) investigated experience effects, specifically the role of task-specific knowledge for two audit tasks, analytical risk assessment and control risk assessment. She did two experiments. In the first experiment she used 38 inexperienced auditors from two different firms with an average of 2.10 years of experience and 28 experienced auditors from the same two firms with an average of 6.72 years of experience. The subjects received background information for a small manufacturing company, including a brief description of the company's size, ownership, and operations for each of the audit engagement assessments. Instructions followed which described and defined which risk assessments were to be made during the audit planning and an indication of which risk assessment the subjects were to consider. Subjects then received lists of 16 cues, obtained from professional sources, that were relevant (targets) or irrelevant (distractors) for one of the two risk judgments. They were asked to circle either "yes" or "no" for each cue, to indicate whether they would consider that factor relevant to the current risk assessment.

In the second experiment she used 41 inexperienced auditors with an average 1.91 year of experience and 23 experienced auditors with an average experience of 5.72 years, where the participants in the second experiments were not the same as the participants in the first experiment. Each subject in experiment two analyzed 16 cases for each assessment (control or analytic procedural risk). Each case contained five relevant cues. In both the control risk and analytical risk assessment, cues indicated either a “high level” or “low level” value of the characteristic of the control system or analytical procedure. Based on the five cues in each case, subjects made an appropriate risk assessment on a nine-point scale. The scales were labeled from "high risk" to "low risk". The postexperiential questionnaires were the same as in Experiment 1.

The results from Bonner’s experiments show that experience helped auditors from only one of two firms to acquire knowledge of relevant cues for cue selection in analytical procedural risk assessment, the reason for this may be due to differences in company training. Experience helped auditors from both firms in agreement on the assessment on the nine-point scale in experiment two and the last result from this research was demonstrated by using judgment theory (Bonner, 1990). The result suggests that training and decision aids could be useful.

It Is common for auditors to perform different audit decision tasks with different training and experience. Libby and Frederick (1990) did a study on how experience-related differences in the content and structure of auditors' knowledge of accounting errors can contribute to the effectiveness and efficiency of their audit decisions. First, they examined a less structured task, where differences in knowledge are likely to have the greatest impact. Second, by specifying the nature of expected knowledge differences in advance and the mechanisms by which they would affect judgment, they were able to test directional predictions of differences in certain aspects of judgment (knowledge–stimulus interactions). The result from this study suggests a potential benefit of employing more experienced auditors to explain audit findings, where more experienced auditors generated a greater number of plausible errors to explain audit findings and they give a more complete assessment of possible explanations. More experienced auditors' frequency perceptions were more accurate, and they generated more likely errors as explanations. All things being equal, this would enable more experienced auditors to reach an appropriate conclusion more quickly than their less experienced colleagues (Libby & Frederick, 1990).

In 1994 Bonner and Walker did research on the effects of instruction and experience on the acquisition of audit knowledge. They focus on the knowledge required to perform ratio analysis in audit planning, using Libby's (1995) model. The Libby model analyzes the connection between abilities, experience, knowledge, and performance. Bonner and Walker (1994) focused on the effectiveness of different combinations of instructions and experience (practice and feedback) in producing knowledge. The results indicate that a combination of instruction and no experience or instruction and practice with no feedback do not produce knowledge. Practice with explanatory feedback and any form of instruction creates knowledge gains but may not always be available in the audit environment. Practice with outcome feedback does not assist the acquisition of knowledge unless it is carried out by instruction with "understanding rules". Practice with outcome feedback combined with "how to rules" does not promote knowledge acquisition. "Understanding rules "provides explanations with the steps and possibly, information about why the steps is performed, how they relate to each other, and so forth. "How to rules" consist of lists of steps or procedures to be followed in performing a task, these rules contain little explanation. The conclusion is that knowledge is affected by the type of training you receive as an auditor and that an auditor with good training with explanatory feedback and understanding rules has a better learning of knowledge than those who do not (Bonner & Walker, 1994).

Moroney and Carey (2011) investigate the relative influence of industry- and task-based experience on auditor performance. The result from their behavioral experiment suggests that industry-based experience has a greater impact on auditor performance than task-based experience. Industry-based experience affects performance regardless of whether an auditor has task-based experience. Auditors gain valuable knowledge from their industry-based experiences, which can be used to help them perform tasks unfamiliar to them. They also found that auditor performance improves with greater exposure to clients in one industry. Contessotto, Knechel and Moroney (2021) investigate the effect of audit team industry-experience and client-specific experience on audit effort, effort being measured by production hours and fees. In their research they used a survey to collect team-level data provided from two Australian mid-tier companies. They analyzed how the experience of the audit team work on a given client influenced the audit effort. Experience may depend on general audit work in a specific industry or work with a specific client. Their result shows that audit team client-specific experience is associated with higher effort. The team level-industry experience is not associated with overall audit effort, but it is associated with less effort during the completion stage of the audit. Team industry experience is associated with relatively more work undertaken by less experienced auditors, resulting in cost savings for the audit firms. Audit team client-specific experience is associated with higher level of effort, which indicate that client-specific experience potentially allows the team to better respond to client risks and/or to provide more value added (Contessotto, Knechel, & Moroney, 2021).

4.2.2 Audit judgement

Farmer, Rittenberg and Trompeter (1987) examine auditors' competitive pressure on audit judgments. In their research they saw that experienced auditors (partners and managers) less often agreed with client's position than less experienced auditors (staff or student groups). The result shows that more experienced auditors may have more knowledge than less experienced auditors. Abdolmohammadi and Wright (1987) have also done research on audit judgement. They research the effect of experience and task complexity on audit judgements. They found that experience effect was significant when task complexity was explicitly assessed.

Ye, Cheng, and Gao (2014) studied the impact of individual auditor characteristics on the probability of audit failure. In their study, they used Chinese data from the period 2000 to 2009. One of the characteristics they investigated was experience, and to measure experience they used the number of years since the auditor obtained the certificate of Charted Public Accountant. The results show that more experienced auditors are associated with a lower likelihood of audit failure.

4.2.3 Professional skepticism

Other areas where experience has previously been researched is how experience affects auditors' professional skepticism. Professional skepticism is according to ISA 200, 13 (l) "An attitude that includes a questioning mind, being alert to conditions which may indicate possible misstatement due to error or fraud, and a critical assessment of audit evidence" (International Auditing and Assurance Standards Board (IAASB), 2010). Ratna and Anisyrkurlillah (2020) study how experience affects professional skepticism. They obtained a sample of 83 auditors and collected data through questionnaires from public accounting firms in Central Java and Yogyakarta in Indonesia. The result shows that experience had a significant effect on auditors' professional skepticism. There is a need for experience for auditors to remain skeptical in every audit practice (Ratna & Anisykurlillah, 2020).

4.2.4 Extensive experience and failure

Even if an auditor has extensive experience, mistakes can still be made. Moeckel (1990) did research on the effect of experience on the frequency of two types of memory errors: Failure to integrate and reconstruction. Failure of integration is defined as failure to make mental connections between separately received information, and reconstruction is defined as changing the mental reconstructions of information to make it consistent with existing knowledge (or memory) (Moeckel, 1990). Moeckel asked auditors to review model working papers that contain contradictions they would have discovered in the absence of reconstruction or failure to integrate. She found that subjects at all experience levels made memory errors. Inexperienced auditors failed to integrate more often, while experienced auditors reconstructed more. Moeckel claims that the reconstructions made by experienced auditors impaired their ability to integrate and their ability to detect integration failures in their subordinates. These results challenge the intuition that more experienced auditors will perform better on all aspects of reviewing working papers. Subjects at all levels of experience committed memory errors and failed to identify contradictions in the working papers. These findings support the claim that inexperienced auditors made errors because their memory structures were not sufficiently developed to allow them to make a rich set of connections between separately received evidence. Experienced auditors erred because their more developed memory abilities led them to under process incoming information and use expectations rather than actual observations when creating a mental representation of evidence (Moeckel, 1990).

Simnett (1996) has done research on the effect of information selection, information processing and task complexity on predictive accuracy of auditors. He found that information selection was a limiting factor in determining predictive accuracy, but audit experience was found to mitigate some of the limitations arising from information selection. Davis (1996) has also done research on how auditors select information. He looked at whether experience affects auditors' approaches to select relevant information and whether selection of more relevant information leads to improved judgement for preliminary control risk assessment (CRAs). The study emphasizes experiential situational knowledge by comparing new audit seniors and experienced audit seniors from then non-Big 6 audit firm. The results showed, in comparison with new senior auditors, that experienced senior auditors showed a higher degree of selective attention to relevant information. Experienced seniors also showed more consistency between the selected relevant information and the CRA response, they selected fewer cues and made their assessments in less time than new senior auditors. These results are consistent with a top-down approach to creating CRAs. However, experience did not improve judgment accuracy since both groups were equally conservative in relation to the company's suggested solution (Davis, 1996).

4.2.5 Effect on audit quality

The research we've seen so far has focused on specific audit tasks and experience. Cahan and Sun (2015) focus on how experience affects an entire audit. They did an archival study on the effect of audit experience on audit fees and audit quality with Chinese data. The results indicated that experience is positive related to audit fee and negatively associated with absolute discretionary accruals. Their findings suggest that more experienced Charted public accountants provide higher audit quality than less experienced Charted public accountants.

Kuntari, Chariri and Nurdhiana (2017) did research on auditor experience and audit quality with public accounting firms in Semarang in Indonesia. They used questionnaires from 30 respondents. Audit quality was measured by using five indicators: (1) the audit report contains objective findings and conclusions of the audit results, as well as constructive recommendations; (2) the resulting report must be accurate, complete, unbiased, persuasive, clear, concise, and timely so that the information provided is of the greatest possible use; (3) the report must state the explanation or response of the official/party of the audit object about the audit result; (4) the report discloses matters that are problems that have not been resolved before the end of the audit; (5) the report must be able to express recognition of a successful performance or an improvement measure carried out by the audit object. Experience was measured using the following indicators: (1) conduct an audit over 3 years, so it will be better to audit; (2) the longer it remains an auditor, the more it can detect errors occurring on the subject of investigation; (3) many clients are already audited so it will improve when they perform the audit; (4) the auditor team that has moved KAP (Kantor Akuntan Publik) will enrich the experience as an auditor; (5) the auditor's ability to audit is reflected in the number of experiences. The result shows that auditor experience had a significant positive effect on audit quality.

Haeridstia and Fadjareniene (2019) also did research on how auditor experience impacts audit quality. They did the research in DKJ Jakarta in Indonesia with data obtained from questionaries from 127 respondents. They got the same results as Kuntari, Chariri and Nurdhiana (2017), that experience influences audit quality.

Chi, Myers, Omer and Xie (2016) investigated the associations between audit partner pre-client and client-specific experience and audit quality using data from public companies in Taiwan. They used discretionary accruals and interest rate spreads as a proxy for audit quality and perceptions of audit quality. They found that both pre-client and client-specific experience improved audit quality and creditor perceptions of audit quality. They also found that audit partner pre-client experience is positively associated with audit quality early in the engagement, but not when the partner has been with the client for at least five years.

4.2.6 No effect on audit quality

There is prior research that shows that experience has no effect on audit quality. Lee, Nagby and Zimmermann (2019) find no evidence of an association between partner experience and audit quality. To measure audit quality, they used both Jones model (abnormal accruals) (Jones, 1991; Kothari, Leone, & Wasley, 2005) and the Dechow and Dichev (2002) models. For measuring experience, they used number of years since the partners bachelor's degree. Kertarjasa, Mawa and Wahyudi (2019) also found no correlation between experience and audit quality. They used questionnaires from 97 auditors from South Sumatra, Indonesia. To measure auditor experience they used number of assignments, experience in auditing, length of being an auditor and added the problem-solving ability. To measure audit quality, they used the method from Okliva and Marlinah (2014) the respondents answered 10 questions by using a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The question had two indications, suitability of the audit with the Auditing Standards and the quality of the audit report. The 5 questions to measure suitability of the audit with Auditing Standards were: (1) When receiving an assignment, the auditor determines the objectives, scope, inspection methodology. (2) All my work must be reviewed by superiors in stages before the audit report is made. (3) The process of gathering and testing evidence must be carried out optimally to support conclusions, audit findings and related recommendations. (4) Auditor administers documents audit in the form of audit working papers and stored properly so that they can be effectively retrieved, referred to and analyzed. (5) In carrying out the audit, the auditor must comply with the established code of ethics matters which are problems that cannot be resolved until the end of the inspection. For measuring quality of the audit report the question were as follow: (1) The report must be able to express recognition of an achievement or a corrective action that has been carried out by the object of inspection. (2) The report must state an explanation or response from the official/party object of inspection regarding the results of the inspection. (3) Reports produced must be accurate, complete, objective, convincing, clear, concise, and timely so that the information provided is of maximum benefit (4) The report must include an explanation or response from the official/object of inspection regarding the results of the inspection. (5) Reports produced must be accurate, complete, objective, convincing, clear, concise, and timely so that the information provided is of maximum benefit.

There are many ways to gain knowledge and measured experience. Experience has an impact on several areas in the audit and experience is important in audit practice. We want to examine the impact audit partner experience has on audit quality in telecommunication industry in Norway.

Our hypothesis on experience and audit quality is formulated as follows:

$$H2_a: Audit\ partner\ experience\ has\ no\ impact\ on\ audit\ quality$$

$$H2_b: Audit\ partner\ experience\ has\ an\ impact\ on\ audit\ quality$$

4.3 Expertise

Several empirical studies have previously been carried out on expertise in the auditing industry. Solomon, Shields, & Whittington (1999) define an industry expert as an auditor who is appointed by his firm and has training and practical experience largely related to a particular industry. They focused on industry expert auditors' knowledge of accounting errors and non-errors stored in and retrievable from memory. They found evidence of greater industry expert knowledge of accounting errors for the industry of their specialization relative to other industries. For non-errors the results indicate industry specialization gains for frequency knowledge accuracy, and mixed evidence for knowledge quantity gains (Solomon, Shields, & Whittington, 1999). Results suggested that focused training and narrow, but deep, direct experiences acquired by an industry expert primarily improve non-error knowledge.

Most previous research shows that there is a positive relationship between expertise and audit quality, (Balsam, Krishnan, & Yang, 2003; DeFond, Francis, & Wong, 2000; Francis, 2004; Francis, 2011; Hammersley, 2006; Hosseinniakani, Inacio, & Mota, 2014; Krishnan G. V., 2003; Lowensohn, Johnson, Elder, & Davies, 2007) (Reheul, Van Caneghem, Van den Bogaered, & Verbruggen, 2017). Expertise is an unobservable variable that can be difficult to measure, but the most used method we have found from the literature is a market share approach. The market share approach is based on the assumption that a large volume of clients from the same industry indicates industry expertise (Balsam, Krishnan, & Yang, 2003).

«The firm(s) with the largest market share(s) has (have) developed the largest knowledge base within that particular industry and significant market shares within an industry reflect significant investments by audit firms in developing industry-specific audit technologies with the expected benefits being increased economies of scale and improved audit quality. » (Neal, Riley, & Ri, 2004, p. 170).

Francis, Richelt, & Wang, (2005) found that the one with the most industry expertise had an average of 50% of the fee in the industry, while the one that came in second only had 22% of the fee in the industry. They also saw that industry expertise was scattered and distributed among the Big 4 firms.

Prior research documents that companies audited by an industry expert have smaller abnormal accruals, which indicates higher audit quality (Balsam, Krishnan, & Yang, 2003). Auditor expertise mitigates accruals-based earnings management more than non-specialist auditors. Audit quality is higher for clients with an auditor expert (Krishnan G. V., 2003). If an audit office has several clients from the same industry or the largest share of fees from an industry, it will give the auditors greater and more opportunities to acquire deep industry knowledge that can lead to industry expertise. Furthermore, audit fees are higher for industry leaders, which is interpreted as higher audit quality, and which is consistent with earnings being of higher quality when the auditor is an industry expert (Francis, 2004).

According to Hammersley (2006), industry specialists are those individuals who are designated by their firms and have received training and experience mainly in a particular industry. He also comments that industry expertise increases the likelihood that the auditor will discover errors. Lowensohn, Johonson, Elder, & Davies (2007) examined the effect of auditor expertise on perceived audit quality. To calculate expertise, they used three different market-based calculations. The selection consisted of both the then Big 5 and smaller audit firms. The survey was conducted by 241 local government finance directors in Florida. The results showed that expertise is positively associated with perceived audit quality.

In Francis's (2011) study on factors associated with audit quality, he comments that audits are of higher quality when performed by competent people. Auditor expertise has an important role in improving audit quality. The fact that clients demand industry expertise can provide an incentive for the audit company to invest in expertise and want industry-based clients (Hosseinniakani, Inacio, & Mota, 2014). In Belgium, Reheul, Caneghem, Van den Bogaered, & Verbruggen (2017) found that auditors with industry expertise provided better audit quality than non-industry experts. They found that industry expertise is important to explain audit opinions in Belgium. A partner with expertise is more likely than one without expertise to report errors and uncertainties in the audit report. This finding suggests that sector-specific auditors provide a higher degree of assurance.

Reichelt & Wang (2010) examine the auditor expertise on a national-level and on a city-level and the effect on audit quality. They found that audit quality is systematically associated with national and city-specific auditor industry expertise. The clients of auditors with national and city-specific expertise had smaller abnormal accruals. The same applied to sub-samples of income-increasing and income-decreasing abnormal accruals. To measure the auditor's industry expertise, they used a market approach; auditor's market share of audit fees within a two-digit SIC category. The result shows that an auditor with both national and city-specific expertise provides higher audit quality.

Chi & Chin (2011) studied whether the Big 4 audit quality is associated with auditor industry expertise, using a sample from Taiwan. They found that firm-level industry expertise is associated with higher audit quality. They also found that if firm-level and individual partner-level had the same industry expertise, audit quality was higher. Therefore, they could conclude that industry expertise is driven by a combination of firm-level and individual partner-level industry expertise. Chi, Lisic, & Pevzner (2011) found that industry expertise at the city level is associated with higher levels of real earnings. They measured auditor industry expertise as the market share of the audit fee of each auditor in each industry at both national and city levels, and measured audit firm size as a Big 4 versus non-Big 4 as an indicator. Their sample consisted of 925 firm-year observations from 2001 to 2008, which likely had strong incentives to steer earnings upward. The results showed that expertise in the audit industry at city level is associated with higher audit quality.

Kharuddin, Basioudis, & Farooque (2021) investigated the effect of Big 4 firms' national and city-office industry specialization on audit quality. They found that clients of the Big 4 joint national and city-level industry specialists have smaller discretionary accruals, lower income-increasing discretionary accruals and less accrual estimate errors, which indicates higher audit quality. They also found that when the Big 4 auditors are both national and city-specific industry leaders, their clients are more likely to be issued a modified audit opinion as well as a going concern audit report. In addition to research at national and city level, research has also been carried out at multinational level.

Gunn & Michas (2018) studied multinational expertise. To measure the multinational expertise, they used market share measure and a country-specific experience measure. Both calculations are negatively associated with client restatements, client restatements indicate that the auditor has not effectively enforced the correct application of GAAP, in this study it indicated higher audit quality. When an auditor is multinational and country-specific expert, the effect on audit quality was the strongest. They found that audit quality was stronger when the auditor has expertise as required to do global group audits, has special expertise in the country where a client has a significant subsidiary, or has both types of expertise on an engagement. It is often expected that with complex issues you need an auditor who is an expert in the area. Research has been carried out on industry expertise for complex business environments and audit quality and the results are mixed.

Francis & Gunn (2015) investigated whether auditor industry expertise affects audit quality in those industries with greater accounting complexity. It is with complicated issues that one expects the differences between an industry expert and someone who is not to be greatest. They found that earnings quality improves in complex industries (less accruals, less accrual estimates errors, fewer recalculations and less analyst forecast errors). For non-complex industries, the auditor's industry expertise was negligible. Their conjecture is that auditor expertise is most likely to matter when accounting and GAAP implementation in an industry is inherently more complex.

Gal-Or, Hoitash, & Hoitash (2022) did research on expertise in mergers and acquisitions. They found that industries with more complex accounting are less likely to experience misstatements. Overall, an expert provides a better audit outcome. Butar-Butar & Indrato (2018) found that earnings persistence for firms in complex industries is lower than for non-complex industries. And that absolute abnormal accruals for firms operating in complex industries are higher than those in non-complex industries regardless of industry specialization. In this case, industry expertise plays no role in improving audit quality for complex companies. Rather, it shows that complex companies have lower audit quality due to higher abnormal accruals. They argue that the assumption that an industry specialist always improves audit quality regardless of the type of industry they operate in is misleading. They say that the complexity of a company can reduces or remove the effect that an industry specialist has on audit quality. Knowledge of the company's practices and norms in a particular industry is often unique and useful, but only in less complex industries (Butar-Butar & Indrato, 2018).

Other research that did not find an association between industry expertise and audit quality is Reichelt & Wang (2010). They found no evidence of an association between national industry leader and higher audit quality. Eshleman & Guo (2020) investigated whether experienced industry specialists provide higher audit quality. They found no association between experienced industry expertise and audit quality when they included industry fixed effects. They also comment that the association between industry expertise and audit quality is sensitive to the way the researcher calculates the expertise. They emphasize the inclusion of industry fixed effects as very important for the analyzes.

We want to examine whether audit partner industry expertise has an impact on audit quality for the telecommunications industry in Norway. Most of the previous research indicates that expertise should have an impact on audit quality.

Our hypothesis on expertise and audit quality is formulated as follows:

$$H3_a: Audit\ partner\ industry\ expertise\ has\ no\ impact\ on\ audit\ quality$$

$$H3_b: Audit\ partner\ industry\ expertise\ has\ an\ impact\ on\ audit\ quality$$

5 Research method

From our literature review, we have examined previous literature on audit quality in relation to partner gender, experience, and expertise. In our thesis we want to further examine if partner characteristics affect audit quality for the telecommunications industry in Norway by means of an archival research approach. Archival research methods review primary sources of information, for scholars often used as a tool to supplement further research by understanding and exploring what has previously been done, to better understand how it is affecting the present time (Johannessen, Tufte, & Christoffersen, 2021, p. 249). Because the topic we want to examine is based on archival research and review of previous literature, and we want to calculate audit quality for a specific industry, we will be conducting a quantitative study.

To measure audit quality on a partner level in our thesis, we use the method of calculating a proxy for audit quality based on abnormal accruals in Francis & Wang (2008) and in addition, as a second proxy to calculate audit quality, we use abnormal accruals according to Kothari et al. (2005). Both models are methods that are generally accepted in literature and have been widely used in prior literature on audit quality.

5.1 Audit quality

Following auditing standards, audit quality is acceptable if the audit is done according to the relevant standards for the country the company is located in. For a Norwegian company, this would be the IAS standard issued by the International Auditing and Assurance Standards Board (IAASB), translated, and compiled by Revisjonskomiteen from Den norske Revisorforening (DnR). If an audit is in accordance with these standards, it would therefore imply that the audit quality is acceptable. Francis summarizes this as a binary view of audit quality, where the audit fails if it fails to apply the correct auditing standards (DeFond & Zhang, 2014; Francis, 2022).

Many scholars think of audit quality in another way than the binary method. This way of viewing audit quality is a spectrum from low quality to high quality, where an audit can be of lesser quality without implying audit failures (Francis, 2022). Francis (2002) states that this continuum spectrum recognizes that audits can be of relatively low quality compared to other audits, without being failures.

According to Francis (2022), it is best to illustrate this type of approach to audit quality with the quality of audited earnings, where there exists extensive literature of how to measure quality of earnings. The literature on measures is focused on the discretion of accounting choices, which mainly affects accruals and adjustments on the accruals, required by the relevant accounting standards (Francis, 2022).

Francis (2022) refers to Nissim's comprehensive review of this literature, which shows that higher quality earnings are persistent, meaning that they are sustainable over multiple periods (Nissim, 2022). But the accruals adjustments in earnings are of a more temporary nature than the cash flow component of earnings (Sloan, 1996), and because of this, firms with a higher volume of accruals compared to other firms where all else is equal, generally have a lower quality of earnings. This also applies to firms with a large number of unexpected accruals, also referred to as abnormal accruals, where the earnings are less persistent and the scope of restatements of earnings are larger (Dechow, Ge, Larson, & Sloan, 2010; Dechow, Sloan, & Sweeney, 1996). Dechow & Sloan (2010) suggest that the quality of earnings and audit quality are related, but not the same. While high audit quality can increase the reliability of financial statements, it does not necessarily guarantee high-quality earnings (Dechow, Ge, Larson, & Sloan, 2010). Conversely, low audit quality can lead to unreliable financial statements, but it does not necessarily mean that earnings are of low quality.

5.2 Abnormal accruals

Francis (2022) defines accruals as "forecasts and estimates that improve the measurement of an organization's operating performance" but then remarks that accruals can be a large estimate that can lower the quality of earnings because of the uncertainty attached to accruals (Francis, 2022, p. 3).

Francis & Wang define abnormal accruals as the firms' total accruals in year *t*, minus the predicted accruals as defined in a calculation (Francis & Wang, 2008, p. 169). They use a measure of audit quality based on the likelihood of detecting financial misstatements. This measure is calculated using logistic regression model that incorporates several audit quality indicators, such as the auditor's experience and independence, the complexity of the audit engagement, and the level of audit effort. The model estimates the probability that the audit will detect a material misstatement in the financial statements, and this probability is used as a proxy for audit quality. The article also uses other measures of audit quality, such as the frequency of restatements and the number of audit deficiencies identified by regulators (Francis & Wang, 2008).

Kothari, Leone and Walsey (2005) uses a modified Jones model (Jones, 1991) to calculate abnormal accruals. The Kothari et al. model estimates a firm's normal level of accruals based on their past performance and compares this to the actual reported levels of accruals in the current period, where the difference is then considered abnormal accruals (Kothari, Leone, & Wasley, 2005). This method of calculating abnormal accruals could also be used as a proxy for audit quality.

5.3 Francis & Wang

For estimating audit quality using the Francis & Wang (2008) model, we first calculated the total accruals in Excel using the formula in equation (1):

$$Total\ accruals = \frac{(Earnings\ before\ extraordinary\ items - Operating\ cash\ flows)}{Total\ assets\ in\ year_{t-1}} \quad (1)$$

Where year *t* is 2021, and earnings before extraordinary items are net income less extraordinary items. The calculation for operating cash flows also follows the calculation in Francis & Wang (2008), and is as follows:

Operating cash flow = Earnings before extraordinary items

+ Depreciation and Amortization
+ Change of deferred income tax
+ Change of untaxed reserve
+ Change in other liabilities
+ Minority interest
- Current accruals

Where we substituted untaxed reserve for pension liabilities. Current accruals are in the model (Francis & Wang, 2008) defined:

Current accruals = Change in non-cash working capital

= Δ Total current assets

- Cash and short-term investments
- Treasury stock shown as current assets
- Δ Total current liabilities
- Total amount of debt in current liabilities
- Proposed dividends

Subsequently, predicted accruals are according to Francis & Wang (2008) calculated using the formula in equation (2):

$$Predicted\ accruals = \frac{\left(Sales\ in\ year_t \left(\frac{current\ accruals\ in\ year_{t-1}}{sales\ in\ year_{t-1}}\right)\right) - (Gross\ PPE\ in\ year_t \left(\frac{depreciation\ in\ year_{t-1}}{gross\ PPE\ in\ year_{t-1}}\right))}{total\ assets\ in\ year_{t-1}} \tag{2}$$

And using total accruals and predicted total accruals for the year 2021, noted as year *t*, we calculated abnormal accruals as such in equation (3):

$$Abnormal\ accruals = \ total\ accruals_t - predicted\ total\ accruals_t \tag{3}$$

The absolute values of the abnormal accruals were imported to Stata and used as the data for our regression analysis for the Francis & Wang (2008) model.

5.4 Kothari et al.

For our estimation of audit quality using the Kothari et al. (2005) model, we used an OLS regression in equation (4) to estimate the beta in Stata.

$$Total\ accruals = \propto_0 + \propto_1 \left(\frac{1}{ASSETS}\right) + \propto_2 (\Delta SALES) + \propto_3 PPE + \propto_4 ROA + \varepsilon \tag{4}$$

Using the estimated beta, we then calculated estimated assets, sales, accounts receivable, gross property, plant and equipment and return on assets in Excel using equation (5)

$$Estimated\ accruals = \propto_0 + \propto_1 \left(\frac{1}{ASSETS}\right) + \propto_2 (\Delta SALES + \Delta AR) + \propto_3 PPE + \propto_4 ROA + \varepsilon \tag{5}$$

We then calculated the abnormal accruals for the year 2021, noted as year *t*, according to the Kothari et al. (2005) as in equation (6)

$$Abnormal\ accruals = total\ accruals_t - estimated\ accruals_t \tag{6}$$

The absolute values of the abnormal accruals were imported to Stata and used as the data for our regression analysis for the Kothari et al. (2005) model.

5.5 Data collection and sample selection

To examine audit quality for our sample we have collected data from three consecutive years, because we need the changes year to year to calculate audit quality. Longitudinal data, or panel data, is tracking the same sample at multiple time points, while cross-sectional data is data collected at a single point in time or a limited time period from a sample (Johannessen, Tufte, & Christoffersen, 2021, p. 265). Cross-sectional data is useful for analyzing relationships between the variables at a single point in time, but it cannot be used to infer causality or changes over time (Johannessen, Tufte, & Christoffersen, 2021, p. 266). Our data set contains data from three consecutive years because we need the data to calculate audit quality, but we are only looking at a single point in time for our analysis using data from a limited time period, and therefore the data we have is cross-sectional data.

Table 5.1 – Sample Selection

No. of observations from Proff Forvalt in the telecommunications industry	1 127
Less no. of observations from companies without a current registered auditor	- 861
Less no. of observations from companies without an auditor in 2021	- 8
Less no. of observations without financial data from 2021, 2020 and 2019	- 76
Final no. of observations used in the abnormal accruals tests	**182**

The data we use in our thesis is collected from public sources. We downloaded company specific and financial data from Proff Forvalt (forvalt.no) from the telecommunications industry for the years 2019, 2020 and 2021. This data set consisted of 1 127 companies and was filtered down to companies with a registered auditor, which was 266 of the 1 127 companies. Since the object of our thesis is to investigate audit quality for financial year 2021, the data was then filtered down to the companies that had a registered auditor in 2021, which brought the sample size down to 258 companies.

We manually downloaded and collected data from the annual accounts for the years 2019, 2020 and 2021 for the 258 companies with a registered auditor in 2021. In addition to retrieving the name of the signing partner of the companies, we also collected some financial data manually from the annual accounts. The manually collected numbers are deferred tax and deferred tax assets, pension liabilities, gross property, plant and equipment and interest-bearing debt. For the Francis & Wang (2008) model we made the assumption that untaxed reserves are equal to pension liabilities listed under liabilities in the balance sheet, to adapt the model to Norwegian financial statements. We also made the assumptions that when a company had no specified interest-bearing debt in the balance sheet or in the notes to the annual accounts, that there is no interest-bearing debt, because we have no other way of identifying the interest-bearing debt from the financial data or the annual accounts.

Data on a partner level was then collected using the name collected in the annual accounts, from Finanstilsynet (Finanstilsynet.no/virksomhetsregisteret/) to document the date of state authorization and the partner's address. Further on, gender was documented from Proff Forvalt (proff.no) if the gender was not made clear from the name of the auditor.

Both Francis & Wang (2008) and in Kothari et al. (2005) uses changes in their calculation of abnormal accruals and expected accruals. To calculate these changes, the data set was filtered on those companies that had financial data we need for years 2021, 2020 and 2019, making the sample size 182 companies. The necessary calculations were done in Excel, before uploading the relevant data to Stata where the analyses were done. Table 5.1 gives an overview of the sample selection.

Outliers are abnormal observations in a data set far away from the regular distribution, with the potential of disrupting the regression model (Johannessen, Tufte, & Christoffersen, 2021, p. 383). Because our data set consists of an already limited population, we winsorized all continuous variables at 5% and 95%, instead of removing the observations. Winsorizing limits the extreme values in our data, to reduce the effect the spurious outliers could have on our regression model (Johannessen, Tufte, & Christoffersen, 2021, p. 383). The variables that were winzorised were abnormal accruals (AA), LSales, CFO, Lev, SALES_GROWTH, PPE_GROWTH, ROA, SIZE, LAG_TOT_ACC, SALES_VOL and ALTMANZ. See table 5.2 in the appendix for an overview of the variables.

5.6 Partner experience

To measure partner experience, we used the date 31st of December 2021, the year end of the financial year we want to look at and subtract the date of state authorization we collected from Finanstilsynet (Finanstilsynet.no/virksomhetsregisteret/) on a partner level, in line with the method for calculating experience in the previous literature.

We calculated the average years of experience in Excel as 21 years and coded the variable as a dummy variable, where the variable got 1 if the years of experience were above the average years of experience, and 0 if the years of experience were equal to or below average.

5.7 Partner expertise

Prior research uses market share as a proxy because there is an assumption that auditors market share is positive associated with industry expertise. Krishnan (2001) argues that there are both theoretical and empirical reasons why a market approach has limitations. On a theoretical level, the assumption is that industry expertise will be reflected in market shares. The supply-based theories argue that industry expertise leads to production efficiency for the auditors through economies of scale, resulting in lower audit costs (Krishnan J. , 2001). But at some point, the production economy will be exhausted. Economies of scale mean that industry expertise is positively linked to the auditor's industry market share. The underlying assumptions are that the audit market is price competitive, and that the audit quality is homogeneous. The product differentiation theory argues that audits are not homogeneous, and that auditors offer quality differences in their audits. Product differentiation (where industry expertise is a component) enables a single audit firm to differentiate its services according to the client's needs, thus creating a niche in the market (Krishnan J. , 2001).

There are three measures based on market share in prior research: 1. The auditor industry market share (continuously measured), 2. Market leadership (dummy variable, 1 if the auditor is among the 3 largest in the industry), 3. Industry specialist with a binary variable defined as 1 if the auditor has a 10% or greater market share, 0 if otherwise. They used the following methods to measure market share: square root of assets, sales, and number of clients (Krishnan J. , 2001).

To calculate partner expertise, we have calculated the percentage of total assets per partner within the industry. We substituted audit fee for total assets, as 97 of the companies in our data set did not have audit fees available in either the pre-existing data or in the notes of the annual accounts.

We calculated the average percentage of total assets per partner in Excel as 1,67% and coded the variable as a dummy variable in Stata, were the variable got 1 if the percentage of expertise was above the average expertise, and 0 if the percentage of expertise was equal to or below average.

5.8 Empirical models

In our analysis we will use the estimation model commonly used in multiple regression analysis, the ordinary least square (OLS) estimation method (Johannessen, Tufte, & Christoffersen, 2021, p. 353).

To examine the association between gender and audit quality, experience and audit quality and expertise and audit quality we adapt the models control variables from Van Linden and Hardies (2018) for the Francis and Wang model and adapt the control variables from Francis and Michas (2013) for the Kothari et al. (2005) model as follows:

Francis and Wang

$$AA_{FW} = \beta_0 + \beta_1 Female + \beta_2 experience + \beta_3 expertise + \beta_4 LSales + \beta_5 CFO + \beta_6 Lev + \beta_7 SALES_{GROWTH} + \beta_8 PPE_{GROWTH} + \beta_9 LAGG_{LOS} + \beta_{10} ROA + \beta_{11} SIZE + \beta_{12} BIG4 \quad (7)$$

Kothari et al.

$$AA_K = \beta_0 + \beta_1 Female + \beta_2 experiene + \beta_3 expertise + \beta_5 CFO + \beta_7 SALES_{GROWTH} + \beta_8 PPE_{GROWTH} + \beta_{11} SIZE + \beta_{12} BIG4 + \beta_{13} LAG\_TOT\_ACC + \beta_{14} SALES_{VOL} + \beta_{15} ALTMANZ \quad (8)$$

All variables are defined in the appendix.

To control for client size we use the natural logarithm of total assets (SIZE) (Choi, Kim, Kim, & Zang, 2010; Francis & Michas, 2013; Francis & Yu, 2009; Van Linden & Hardies, 2018) and the natural logarithm of total sales (LSales) (Francis & Wang, 2008), we expect that larger companies have lower abnormal accruals than smaller companies (Francis & Wang, 2008). According to Francis and Wang (2008), it is well documented that operating cash flows (CFO) has a negative relation with abnormal accruals, therefore we control for CFO scaled by total lagged assets (Choi, Kim, Kim, & Zang, 2010; Francis & Michas, 2013; Francis & Yu, 2009). We control for the change in sales revenue (SALES_GROWTH) because sales growth is expected to affect earnings quality and we expect SALES_GROWTH to have a positive effect on abnormal accruals (Choi, Kim, Kim, & Zang, 2010; Francis & Michas, 2013; Francis & Yu, 2009; Van Linden & Hardies, 2018). We controlled for change in gross property, plant and equipment which could also affect yearly accruals if the relation between accruals and gross property, plant and equipment is non-linear (Francis & Michas, 2013; Francis & Wang, 2008). To control for the probability of bankruptcy, we include leverage (Lev), because debt covenants may imply incentives for earnings management. To measure Lev, we calculate the ratio of debt to total assets, and we expect a positive relation to abnormal accruals (Choi, Kim, Kim, & Zang, 2010; Francis & Wang, 2008; Francis & Yu, 2009; Van Linden & Hardies, 2018). Another variable that controls for bankruptcy risk and financial distress is LAGG_LOSS, which is a dummy variable that shows whether companies had a loss the previous year. Loss previous year provides incentives to increase earnings for the subsequent year (Francis & Wang, 2008; Van Linden & Hardies, 2018). The variable return on assets (ROA), control for companies' performance-related accruals, we expect ROA to have a positive effect on abnormal accruals (Van Linden & Hardies, 2018). We control for audit firm size by including a dummy variable for BIG4, we expect the larger audit firms the lower abnormal accruals (Francis & Wang, 2008; Reichelt & Wang, 2010; Van Linden & Hardies, 2018). To control for the reversal accrual over time, we control for lagged total accruals, and we expect the variable to be negatively associated with abnormal accruals (Choi, Kim, Kim, & Zang, 2010; Francis & Michas, 2013). To control for the volatility of sales growth (SALES_VOL) we measured the standard deviation of sales for the three recent fiscal years, we expect the coefficient to be positive (Francis & Michas, 2013; Francis & Yu, 2009). We also control for the risk of bankruptcy (ALTMANZ) by using the Altman-Z score which we expect to have a negative effect on abnormal accruals (Francis & Michas, 2013; Francis & Yu, 2009; Reichelt & Wang, 2010).

6 Empirical findings

6.1 Descriptive statistics and correlations

Table 6.1 provides descriptive statistics for the abnormal accruals sample. The mean for absolute abnormal accruals (AA_FW) for Francis and Wang model is 0,275468 and the mean for absolute abnormal accruals (AA_K) for the Kothari et al. model is 0,1641553. Female, experience, and expertise are all three dummy variables. The population consists of 132 unique auditors, of which 22 are female, this amounts to 16,6% of the auditors in the population. Of all 182 companies in the population, 28 companies have a female audit partner. This means that 15,38% of the companies in the population are audited by a female audit partner. There are 64 auditors who have above average experience (more than 21 years), of which 12 are female. In total, there are 87 companies in the population that have been audited by an auditor partner with above average experience, this amounts to 47,8% of all companies in the population, 14 of these are audited by a female audit partner. There are 10 auditors who have above average expertise (more than 1,6% of the industry), two of whom are female. In total, there are 27 companies in the population that are audited by an audit partner with above average expertise, this amounts to 14,8% of all companies in the population, 4 of these are audited by a female audit partner.

The mean LSales is 17,47. Mean CFO is 0,213877. Mean Lev is 0,601053. Mean SALES-GROWTH is 12,9%. Mean PPE_GROWTH is – 10,8%. Mean LAGG_LOSS is 0,1593407, 15% of the companies had negative income previous year. Mean ROA is 5,94. Mean SIZE is 17,83. Mean BIG 4 is 0,5109, 51% of the companies in the population have been audited by one of the four big auditing firms. Mean LAG_TOT_ACC is -0,1158. Mean SALES_VOL is 21,52 and mean ALTMANZ is 1,873.

Table 6.1 – Descriptive Statistics

Variables	Mean	Std.Dev.	Min	Max
AA_FW	.275468	.2975976	.0066281	1.0826
AA_K	.1641553	.1487605	.0124804	.5602506
Female	.1538462	.3617965	0	1
experience	.478022	.5008947	0	1
expertise	.1483516	.3564288	0	1
LSales	17.47513	1.728825	14.29732	20.90702
CFO	.213877	.336307	-.4450907	.9568875
Lev	.6010153	.2322725	.1351399	.9800583
SALES_GROWTH	.129115	.3134771	-.3525885	.9564033
PPE_GROWTH	-.1088753	.2111801	-.6537088	.2887357
LAGG_LOSS	.1593407	.3670031	0	1
ROA	5.949024	11.38928	-17.34688	31.19501
SIZE	17.83861	1.8444435	15.08048	21.44462
BIG4	.510989	.5012582	0	1
LAG_TOT_ACC	-.115835	.2040497	-.5890359	.2241422
SALES_VOL	21.52747	38.45462	.1646096	147.316
ALTMANZ	1.873079	1.538909	-.5536664	5.30432

Correlation table 6.2 show the correlation between the variables used is our regressions. Abnormal accruals for both models show a positive correlation with the test variable female. For test variable experience the table show mixed correlation results. Abnormal accruals Francis and Wang (2008) (AA_FW) and experience correlate positively and abnormal accruals Kothari et al. (AA_K) correlate negatively. The test variable expertise correlate negative for both models. The highest correlation among the independent variables is between LSales and SIZE (0,8049). A method to detect multicollinearity is calculating the variance inflation factor (VIF), for each independent variable, where 1 means no multicollinearity exists. There is no definite limit to the value of VIF, but Cleff (2019) refers to Hair et al. (2006, p. 230) that notes VIF = 10 as a frequently used upper limit, but for smaller samples like in our analysis, they recommend a more restrictive VIF-value.

Table 6.2 – Correlation table

	AA_FW	AA_K	Female	experience	expertise	LSales	CFO	Lev	SALES_GROWTH	PPE_GROWTH	LAGG_LOSS	ROA	SIZE	BIG4	LAG_TOT_ACC	SALES_VOL	ALTMANZ
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
AA_FW	1.000																
AA_K	0.5710	1.000															
Female	0.0666	0.0301	1.000														
experience	0.0614	-0.0821	0.0188	1.000													
expertise	-0.0604	-0.0950	-0.0066	-0.0590	1.000												
LSales	-0.1029	-0.2361	0.1060	-0.0281	0.4542	1.000											
CFO	0.3154	0.1517	0.0635	-0.0861	-0.0185	-0.0656	1.000										
Lev	0.1775	0.0214	0.0533	-0.1005	0.0905	0.2772	0.1027	1.000									
SALES_GROWTH	0.2075	-0.0306	0.0735	0.0019	0.0345	0.0536	0.2057	0.0987	1.000								
PPE_GROWTH	0.0924	0.0334	0.0588	-0.1337	-0.0519	-0.0714	0.1087	0.0643	0.2872	1.000							
LAGG_LOSS	0.2387	0.2560	0.0640	-0.2363	-0.0128	-0.0513	-0.0814	0.1400	0.1747	0.1810	1.000						
ROA	-0.0985	-0.0993	-0.0946	0.0531	0.0268	-0.0040	0.3708	-0.1859	0.0021	-0.0676	-0.4028	1.000					
SIZE	-0.1787	-0.2957	0.0692	-0.0914	0.5299	0.8049	-0.1287	0.1434	0.0685	0.0353	0.0715	-0.1401	1.000				
BIG4	0.0124	-0.1175	0.0516	-0.0760	0.4083	0.3869	-01372	-0.0330	0.1312	0.0360	0.0655	-0.0535	0.5414	1.000			
LAG_TOT_ACC	-0.3310	-0.1713	-0.0918	0.0427	0.0554	0.0432	-0.5599	-0.1538	-0.2288	-0.0892	-0.0874	-0.0333	0.0862	0.0115	1.000		
SALES_VOL	-0.0294	-0.0668	0.0655	-01365	0.5081	0.7099	-0.0056	0.1142	0.0822	-0.0460	0.0305	0.5809	0.6353	0.3586	0.018	1.000	
ALTMANZ	-0.0024	0.0668	-0.0237	0.1729	-0-1314	-0.1412	0.1002	-0.4802	-0.0195	-0.2435	-0.2435	-0.4514	-0.3767	-0.1864	-0.0177	-0.0853	1.000

We have done VIF tests on both our models and all regressions to control for multicollinearity. For regression 1 the lowest VIF was 1,04 and the highest was 3,78. Regression 2 the lowest VIF was 1,11 and the highest was 3,78. For regression 3 the lowest VIF was 1,16 and the highest was 4,02. For regression 4 the lowest VIF was 1,05 and the highest was 4,04. For regression 5 the lowest VIF was 1,02 and the highest was 2,47. For regression 6 the lowest VIF was 1,08 and the highest was 2,48. And for regression 7 the lowest VIF was 1,14 and the highest was 2,59. For regression 8 the lowest VIF was 1,02 and the highest was 2,60. None of our model had a VIF over 10 which is the number Cleff (2019) and Hair et al. (2006) recommend as an upper limit. The results from the VIF test show that our models have moderate correlation and there is no need to make any changes to our models.

6.2 Regression results

Table 6.3 reports the results of our regression with absolute abnormal accruals as the dependent variable. We estimate six regressions models with different abnormal accruals (AA_FW or AA_K) and different explanatory variables (Female, experience, and expertise). In regression 1 to 4 we use the abnormal accruals based on Francis and Wang model as the dependent variable. The adjusted R^2 for these models are around 22%. If we compare our result with other published papers, we find different results. Van Linden & Hardies (2018) had a R^2 at approximately 25%, Francis and Wang (2008) had 16%, Krishnan, Krishnan and Song (2017) had between 42% - 47,8%, and Lesage, Ratzinger-Sakel & Kettunen (2016) had a R^2 at 14%. In regression 6 to 8 we use the abnormal accruals based on the Kothari et al. model as the dependent variable. The Adjusted R^2 for these models are around 10%. If we compare our result with prior published papers, we see that 10% is a little low. Francis & Michas (2013) had a R^2 at approximately 26,9%, Reichelt & Wang (2010) had approximately 42%, Hirbar & Nichols (2007) had a R^2 between 12,5%-17,4%, Francis & Yu (2009) had a R^2 between 38,8%-40,7%, Choi, Kim, Kim, & Zang (2010) had a R^2 at 16,35%.

The results show that female (regression 1 and regression 4) and expertise (regression 2 and regression 4) are not significant, but experience (regression 3 and regression 4) was significant in the Francis and Wang model. The estimated coefficient for experience is positive, that is, audit partners who have above average experience have higher abnormal accruals, which suggests that they have lower audit quality. This provides support for our hypothesis that experience affects audit quality in the telecommunications industry, and we reject hypothesis $H2_a$ audit partner experience has no impact on audit quality. The coefficient estimates for our control variables for Francis and Wang model, CFO[***], LAGG_LOSS[***] and BIG4[**] are positive and significant at 1%[***] and 5%[**] level. This means that abnormal accruals are higher for companies that have a negative result the previous year, a larger cash flow from operations this year and are audited by one of the Big4 audit firms. SIZE[***] and ROA[**] is negative at 1%[***] and 5%[**] significant level, which indicates that large companies with higher return on assets have lower abnormal accruals and higher audit quality. For the hypotheses for audit partner gender and audit partner expertise in the telecommunications industry in Norway, we retain the null hypothesis $H1_a$ audit partner gender has no impact on audit quality and $H3_a$ audit partner expertise has no impact on audit quality.

The results from the Kothari et al. models show that none of the explanatory variables female, experience and expertise are significant. We retain all three null hypothesis, $H1_a$ audit partner gender has no impact on audit quality, $H2_a$ audit partner experience has no impact on audit quality and $H3_a$ audit partner expertise has no impact on audit quality. The coefficient estimates for our test variables for the Kothari et al. model show that, SIZE[***] are negative and significant at 1% level, that indicates that large companies have lower abnormal accruals and higher audit quality. Control variable, SALES_VOL[**] are significant at 5% level that indicates that the higher the standard deviation of company sales, the higher the abnormal accruals and lower audit quality. See table 6.3.

[***] p<0,01. Coefficient. Number in parentheses is standard deviation
[**] p<0,05. Coefficient. Number in parentheses is standard deviation

Table 6.3 – Regression results

Variables	Regression 1 AA_FW	Regression 2 AA_FW	Regression 3 AA_FW	Regression 4 AA_FW	regression 5 AA_K	regression 6 AA_K	regression 7 AA_K	regression 8 AA_K
Constant	.785567 (.2263327)***	.7056083 (.2257371)***	.8135496 (.2473375)***	.7385412 (.2482426)***	.8413966 (.1571117)***	.8399147 (.1568473)***	.08537048 (.1606748)***	.8556789 (.1611737)***
Female	.0059189 (.0549075)			.0014783 (.0545535)	.0134229 (.0291693)			.0152304 (.0293323)
experience		.0892535 (.0403227)**		.0894185 (.040596)**		-.0189974 (.0216708)		-.0195982 (.0217909)
expertise			.192499 (.0663322)	.0216537 (.0658629)			.0144105 (.0366168)	.0160808 (.0367911)
LSales	.0294664 (.0210775)	.0276228 (.0206617)	.0296281 (.[1]0209311)	.027435 (.0209216)				
CFO	.3053687 (.0661087)***	.3209316 (.0651998)***	.3054872 (.0657922)***	.3201075 (.0659635)***	.0222585 (.0385979)	.0194365 (.0386913)	.0211666 (.0387518)	.0175457 (.0390355)
Lev	.1212127 (.0941009)	.1356717 (.0929761)	.1193354 (.0941826)	.1340399 (.0936716)				
SALES_GROWTH	.0849683 (.677096)	.0688712 (.0671401)	.0854638 (.067674)	.0691081 (.0610288)	-.0379179 (.0362476)	-.035118 (.0362648)	-.0371022 (.0362436)	-.0353081 (.0364529)
PPE_GROWTH	-.0052874 (.0989122)	.0156982 (.0978817)	-.0026548 (.0990878)	.0180766 (.098811)	-.0345668 (.0528808)	-.0299077 (.0531408)	-.0367701 (.0529499)	-.0300966 (.0535178)
LAGG_LOSS	.1620989 (.0600653)***	.191417 (.0606588)***	.1622901 (.060037)***	.1914823 (.061088)***				
ROA	-.0042614	-.0041003	-.0043516	-.0041644				

*** p<0,01. Coefficient. Number in parentheses is standard deviation

** p<0,05. Coefficient. Number in parentheses is standard deviation

	(.0021081)**	(.0020657)**	(.0021041)**	(.0021014)**				
SIZE	.0689467 (.0205001)***	-.661619 (.0202154)***	-.0706378 (.0211398)***	-.0678648 (.0210253)***	-.0395981 (.0089131)***	-.0389043 (.008917)***	-0,0402296 (.0091193)***	-.0398912 (.0091732)***
BIG4	.1075155 (.047329)**	.1131697 (.0467266)**	.1049194 (.0482108)**	.1101298 (.0478916)**	.0194224 (.0252276)	.0184654 (.0252153)	.0176777 (.0256683)	.0162307 (.0257795)
LAG_TOT_ACC					-.08607 (.0629565)	-.088537 (.0627384)	-.089521 (.0629857)	-.0883627 (.0632722)
SALES_VOL					.0008868 (.0003633)**	.0008454 (.0003663)**	.0008548 (.0003745)**	.0007998 (.0003796)**
ALTMANZ					-.0082989 (.0076361)	-.0071807 (.0077269)	-.0083232 (.0076379)	-.0072056 (.0077627)
Adj R-Squared	.2264	.2479	.2267	.2394	.1063	.1091	.1060	.1010
Observ.	182	182	182	182	182	182	182	182
VIF lowest	1,04	1,11	1,16	1,05	1,02	1,08	1,14	2.60
VIF Highest[2]	3,78	3,78	4,02	4,04	2,47	2,48	2,59	1.02

*** p<0,01. Coefficient. Number in parentheses is standard deviation
** p<0,05. Coefficient. Number in parentheses is standard deviation

6.3 Additional tests

As additional tests, we ran interaction terms between gender and experience and gender and expertise on both models, none of the two interactions became significant in the models. We also run a regression with expertise as a continuous variable, expertise was still not significant.

As another additional test we run the regression on sub-sample of the accruals. We run regression for income-increasing abnormal accruals and income-decreasing abnormal accruals. For Francis and Wang model, female and expertise was not significant for neither income-increasing abnormal accruals nor income-decreasing abnormal accruals and the population for both sub-samples were under 100, which is below the recommended size most statisticians agree on to get to draw meaningful conclusions (Johannessen, Tufte, & Christoffersen, 2021, p. 278). For Francis and Wang model, experience became significant for income-increasing abnormal accruals and not significant for income-decreasing abnormal accruals. Here the populations are also below 100 for both sub-samples, so we did not include the result in our thesis. One should be careful in interpreting results with low populations. But if we interpret the result from this regression for income-increasing abnormal accruals which had a population of 85, The result suggests that companies with an audit partner with above average experience have higher income-increasing abnormal accruals. That indicate lower audit quality for audit partner that have above average experience.

For the Kothari et al. model the income-decreasing abnormal accruals population was under 100 and the explanatory variables female, experience and expertise was not significant in any of the regressions. For Income-increasing abnormal accruals the population for all three regression was 102, female and expertise were not significant, but experience was significant at 5% level and the coefficient was negative. That indicates that auditor with an over average experience has lower income-increasing abnormal accruals. Which indicates that more experienced auditors have higher audit quality.

7 Conclusion

The research question we wanted to look at in our thesis was if partner characteristics affect audit quality for the telecommunications industry in Norway. We wanted to look at gender, experience and expertise as our characteristics, as we found interesting literature about these characteristics which formed the basis for our hypotheses, that these characteristics could influence audit quality in Norway as well.

Our thesis was done on 182 companies in the telecommunications industry for the year 2021. We did a regression analysis using two generally accepted methods in the literature, abnormal accruals according to Francis & Wang (2008) and abnormal accruals according to Kothari et al. (2005) to calculate a proxy for audit quality.

We found that in the Francis & Wang model, partner experience was a significant characteristic. Partners with experience above average had a higher level of abnormal accruals and thus a lower level of audit quality. In the Kothari et al. model, experience was not significant. For the other characteristics, there are no significant findings in our thesis.

Our thesis is conducted on one industry with a limited sample size of 182 companies because of time limitation and a substantial amount of manual data collection, but the results show that partner characteristics can affect audit quality in Norway. We suggest future research to conduct a similar study on partner characteristics for different industries and with larger sample sizes, to see if there is a gender effect or partner expertise effect on audit quality in Norway.

7.1 Limitations

Our study contains some limitations. There is research that comments on the use of publicly available partner demographic variables such as gender. They do not criticize the use of public available demographic variables, but they emphasize the need to go beyond such data to understand which partner characteristics matter (Cameran, Campa, & Francis, 2022). Khlif and Achek have also commented on the limitations of using gender in research, when the research relies on a simplified dualistic gender models (e.g., dummy variable; 1 if female and

0 otherwise). They believe that gender is a more complex phenomenon, rather than being able to fit it into a simple model and to draw conclusions from it (Khlif & Achek, 2017). Other limitation that we need to take into consideration, is that females tend to audit relatively smaller and less complex firms, (Garcia-Blandon, Argilés-Bosch, & Ravenda, 2019).

As mentioned in the method of calculating expertise, the most used measure to measure industry expertise is the market share approach with a continuous form and as a dummy variable. Krishnan's (2001) conclusion is that market-based approach is not the most adequate proxy. Meza (2013) also concludes in his research that the methods used in the literature are not the best methods for measuring industry expertise. His study examines whether industry specialization, measured using the auditor's market share within the industry, improves audit quality. First, this study showed a connection between ordinary proxies of audit quality and specialization in the auditing industry, However, when they matched clients of specialist and non-specialist auditors on several dimensions, as well as only on industry and size, there were no statistically significant differences in audit quality proxies between a specialist and a non-specialist. Overall, the study suggests that specialization in the auditing industry, measured using the auditor's market share within the industry, is not a reliable indicator of audit quality. Meza (2013) argues that this study does not exclude that industry expertise has an impact on audit quality, but the existing method does not capture the effect.

For our thesis we have looked at one industry with a limited number of observations in our analysis which may have impacted the results. In addition, the data collection was partly manual which was a time-consuming operation, that made the limited time frame for our master's thesis a limitation to our study.

8 References

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9 Appendix

Table 5.2 – Variables

AA_FW	Total abnormal accruals for the Francis & Wang model
AA_K	Total abnormal accruals for the Kothari et al. model
Female	Dummy variable 1 if auditor is a female in year t, 0 if not
experience	Dummy variable: 1 if an auditor is above average and 0 below average. Average years of experience is 21
expertise	Dummy variable: 1 if an auditor is above average and 0 below average. Average expertise is 0,0166931
LSales	Log of client sales for firm *i* in year *t*
CFO	Operating cash flows for firm *i* in year *t* scaled by lagged total assets
Lev	Total liabilities/total assets for firm *i* in year *t*
SALES_GROWTH	Sales growth rate, defined as the sales in year year *t* minus sales in *t - 1* and scaled by sales in year *t - 1*
PPE_GROWTH	Growth rate of gross property, plant and equipment (PPE), defined as PPE in year *t* minus PPE in *t – 1* and scaled by PPE in *t - 1*
LAGG_LOSS	Dummy variable 1 if firm *I* reports negative income before extraordinary items in year *t - 1*
ROA	Return on assets. Net income/total assets * 100
SIZE	The natural logarithm of total assets
BIG4	Dummy variable 1 if firm *i* is audited by a Big 4 auditor in year *t*, 0 otherwise
LAG_TOT_ACC	The firm's *i* total accruals scaled by total assets in year *t - 1*
SALES_VOL	Standard deviation of a firm's *i* sales from year *t - 2* through year *t*
ALTMANZ	Probability of bankruptcy using the Altman-Z score for private companies: 0,717 * working capital / total assets + 0,847 * retained earnings / total assets + 3,107 * EBIT / total assets + 0,420 * book value of equity / total liabilities + 0,998 * sales / total assets
F_experience	Interaction between female and experience
F_expertise	Interaction between female and expertise
AA_increase	Abnormal accruals increasing (absolute value)
AA_decrease	Abnormal accruals decreasing (absolute value)