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Table of Contents

1.Introduction	1
1.1 Covid-19 pandemic and audit reporting	1
1.2 Research gap and motivation	2
2. Current regulatory environment on audit opinion.....	3
2.1 Unqualified (unmodified) audit opinion	3
2.2 Modified audit opinion	4
2.3 Going concern modifications in an audit opinion.....	4
3. Current regulatory requirements on key audit matters.....	5
4. Literature review on audit opinion during crisis	7
4.1 Hypothesis development on audit opinion.....	11
5. Literature review on key audit matters.....	13
5.1 Hypothesis development on key audit matters	15
6. Research design.....	16
6.1 Empirical models	16
6.2 Sample selection	18
6.3 Study variables.....	21
6.4 Data sources	25
7. Descriptive statistics.....	26
7.1 Descriptive statistics for going concern.....	26
7.2 Descriptive statistics for key audit matters	31
8. Linear regression	36
9. Conclusion.....	42
Literature	44
Appendices	48
Appendix A: Abstract.....	48
Appendix B: Abstrakt.....	49

List of abbreviations

ALRKAM	Account-level Key Audit Matter
ELRKAM	Entity-level Key Audit Matter
GICS	Global Industry Classification Standard
HGB	Handelsgesetzbuch (German commercial code)
ISA	International Standard on Auditing
KAM	Key Audit Matter

List of tables

Table 1: Composition of the sample.....	18
Table 2: Type of KAM disclosed in the audit report.....	23
Table 3: Frequency of audit reports by type of report 2017-2020.....	26
Table 4: Type of emphasis of matter paragraphs 2017-2020	27
Table 5: Types of audit reports by audit firm 2017-2020.....	28
Table 6: Types of audit reports by industry sector	30
Table 7: KAMs by accounting standard	31
Table 8: Mean number of reported KAMs	32
Table 9: Number of cases of audit reports with zero KAMs.....	32
Table 10: Frequency of Key Audit Matters (KAMs) per year	33
Table 11: „Covid-19“ frequency in the reported KAMs 2020/2019	33
Table 12: Sample companies distributed by the number of KAMs	34
Table 13: Sample companies distributed by the number of ELRKAMs.....	34
Table 14: Sample companies distributed by the number of ALRKAMs	35
Table 15: Pearson correlations for KAMs	36
Table 16: Pearson correlations for ELRKAMs	36
Table 17: Pearson correlations for ALRKAMs.....	37
Table 18: VIF and tolerance values	37
Table 19: Linear regression, standard errors	41

List of pictures

Picture 1: German stock index.....	19
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1.Introduction

The Covid-19 pandemic is a recent topic, which has a large impact on many aspects of our lives. It affects the medical industry; many businesses are dealing with financial difficulties and many people has lost their job and are struggling to survive every day. All these issues have a direct impact on the economy, which is experiencing big difficulties. And since businesses are the driving force of the economy, it is important to evaluate their financial status correctly. This is where auditors have a very important role because they are obliged to analyze the financial status of their clients. According to International Standard on Auditing (ISA) 570, the auditor responsible for a certain company shall objectively (with sufficient audit evidence) evaluate the financial status of such entity; and shall disclose any going concern issue in the audit report if such circumstances occurred during the financial period. Going concern issues are reported when based on appropriate audit evidence, the entity is proving to experience material uncertainty and it lacks the ability to continue its operations as a going concern (IAASB, 2015). Furthermore, according to ISA 701, the auditor shall also disclose the most significant risks in the audit report, that were identified during the audit (IAASB, 2015).

1.1 Covid-19 pandemic and audit reporting

Based on the prior research, there is an evidence that crises have an impact on auditor`s report. A review of audit reports by Xu et al. (2011) in Australia during the financial crisis period (2005 – 2009) had shown a stable number of unqualified audit opinions in the period 2005 to 2007. However, after the investment bank Lehman Brothers filed for insolvency in 2008, the results showed a decreased number of unqualified audit opinions by almost 10 % (from 85% to 74,4%) for financial periods 2008 and 2009. A similar development can be observed for Spanish unlisted companies in the study by Mareque et al. (2017) in the period 2007 – 2010. The number of favorable audit opinions decreased slightly by 2% and went back to the same percentage as before the financial crisis in 2010. Further observations showed that even though the overall result of favorable opinions decreased only by a small percentage, there was a strong increase of emphasis paragraphs regarding going concern premise in such reports from 9% in 2007 to 67% in 2008.

1.2 Research gap and motivation

According to prior research, there is a clear evidence that financial crisis in 2007 has had a negative impact on the number of unmodified audit opinions. Even though the Covid-19 pandemic is not being described as a financial crisis, the pandemic has also led to a certain breakdown of the economy and so we can observe several similarities between the crisis in 2007 and 2020. While I was doing my research on similar papers regarding the crisis and going concern reporting, I was able to find several papers that dealt with this issue, but only relating to financial crisis in 2007. For this reason, I decided to conduct the research on the same issue, however, this thesis will be dealing with the impact of Covid-19 pandemic on the audit report. And since audit reports consist also from a section with key audit matters, this paper will also analyze the determinants of the number and type of these matters and whether there are differences between crisis year (2020) and the rest of the study period. Based on my prior research and the current situation with Covid-19 pandemic, this work should provide an answer to following research question:

What is the impact of Covid-19 pandemic on audit reports of German listed companies participating in the SDAX index during the period 2017 – 2020?

2. Current regulatory environment on audit opinion

Since the target area of this thesis are German listed companies, it is important to clarify the regulations regarding the audit opinion on a German market. Furthermore, this thesis aims to analyze the consolidated financial statements and their audit reports. The most important document that regulates the audit of financial statements in Germany is the German commercial code (HGB). § 317 HGB sets out criteria for the subject and scope of auditing and requires companies to apply International Standards on Auditing when inspecting the financial records of an entity (§ 317 V 1 HGB). According to § 322 HGB, the responsible auditor is required to summarize the result of the audit in writing in the audit opinion. During the preparation of such report, the auditor shall follow the International Standards on Auditing, that were accepted by the European Commission in the Article 26/3 in the European directive 2006/43/EG (European Parliament and European Council, 2006). Furthermore, the auditor is obliged to decide, based on the audit evidence and an entity's financial results, what type of audit opinion will be stated in the final report. There are four types of audit opinion, each of them is granted certain criteria that must be fulfilled (§ 322 II 1 HGB). As mentioned above, the German commercial code, in accordance with the European directive 2006/43/EG, follows the rules set in the International Standards on Auditing (ISA). ISA 570 regulates auditor's obligations relating the going concern and their implementation in the auditor's report (IAASB, 2015). Furthermore, ISA 700 deals with the auditor's responsibility to form an audit opinion. Last but not least, ISA 705 regulates the modification of an audit opinion, if the audit of financial statement is showing doubts about an entity's going concern premise (IAASB, 2015). This thesis aims to review audit reports and especially the audit opinion stated in such report. For this reason, it is essential to clarify the criteria for each type of an audit opinion. In accordance with § 322 HGB, the law establishes four types of audit opinions, namely the unqualified (unmodified) opinion and modified opinion, which is further subdivided into a qualified opinion, an adverse opinion and a disclaimer of opinion (§ 322 II 1 HGB).

2.1 Unqualified (unmodified) audit opinion

An auditor shall express an unmodified opinion, when the result of an audit of the financial statement corresponds with the applicable accounting framework; and when there is no doubt that the financial statement is free from material misstatements (IAASB, 2015). The responsible auditor

shall have a full access to a sufficient evidence of an audited entity and shall be able to confirm that the financial statement gives a true and fair view about the financial position and performance of such entity (§ 322 III 1 HGB).

2.2 Modified audit opinion

An audit opinion shall be modified in a case when the auditor decides, based on sufficient evidence, that the financial statement is not fully free from material misstatements. There are three types of modified audit opinion. Firstly, a qualified audit opinion shall be granted if there is an evidence of material misstatements, but their scope is not extensive (IAASB, 2015) and an entity's financial statement, with its limitations, gives a true and fair view about the financial position and performance of such entity (§ 322 IV 1 HGB). Secondly, if the material misstatements, either individually or as a whole, are both extensive and substantial to financial statements, the auditor shall express an adverse opinion. Finally, if an auditor is unable to access sufficient audit evidence about the audited entity; and if he identifies that the financial statement includes material and extensive misstatements, the auditor shall disclaim an opinion (IAASB, 2015).

2.3 Going concern modifications in an audit opinion

Since the main objective of this thesis is to review audit reports with emphasis on going concern issues, it is important to clarify the ISA 570, which deals with the modified audit opinion because of doubts in going concern of an audited entity. In a case that an entity has prepared its financial statement according to the going concern principle, but the auditor identifies several shortcomings in the preparation according to going concern accounting, the auditor shall grant an adverse opinion in the audit report. If on the other side, according to the auditor's judgement the preparation of the financial statement based on going concern principle is appropriate, but a material uncertainty exists, the auditor shall express an unmodified opinion and include a separate paragraph within the audit report pointing out to a material uncertainty associated with going concern (IAASB, 2015).

3. Current regulatory requirements on key audit matters

A further requirement for an audit report is the disclosure of key audit matters, which also belongs to the research scope of this thesis. For this reason, it is important to clarify the basic regulations regarding this topic.

As stated by Segal (2017), in the context of the formation of an audit report, the requirement to disclose key audit matters belongs recently to one of the most significant changes in the work of an auditor as well as in the way how audit reports are being delivered. By definition, key audit matters are matters that by the professional judgement of an auditor, communicated together with the management leaders of the audited entity, represent the most significant events reported in the given financial year. For example, the significance could either be because of a higher risk of a material misstatement or because of an accounting estimate with a higher risk of an estimation uncertainty.

The international standard that regulates the communication of key audit matters in the auditor's report is the International Standard on Auditing 701. As also stated earlier, this standard belongs to the recent developments in the auditing world and is effective for financial statements ending after December 15, 2016. The main idea of the communication of key audit matters is to increase the information value of the auditor's report. The information value is essential for users of the annual statement such as investors or any other stakeholder and helps them to better understand current challenges of the audited entity. However, it is also important to note that the disclosure of key audit matters does not replace the required disclosures in the financial statement by management, nor is a substitute for the clear and fair presentation of financial results. Furthermore, it also does not replace any modifications of the audit opinion according to ISA 705 as well as an existence of the material uncertainty according to ISA 570. In other words, the aim of the disclosure of key audit matters is to simply enhance the informative overview about the most significant accounts and events of the financial year (IAASB, 2015).

The ISA 701 is relevant for financial statements of listed companies as well as under the circumstance when the auditor agrees to disclose the key audit matters by himself. However, when the

auditor expresses a disclaimed audit opinion on the financial statement of the audited entity, the ISA 705 does not allow to disclose key audit matters in the auditor`s report. The content-related criteria for the disclosure are also set in the ISA 701; and require the auditor to include a reference in each key audit matter to the related matter within the financial statement. Furthermore, each reported key audit matter shall have a description about why the matter is significant as well as how it was approached and audited (IAASB, 2015).

4. Literature review on audit opinion during crisis

Expressing an audit opinion is an important task of the auditor and could be also very challenging when certain events in the world economy occur. In fact, there are several papers that researched audit opinion in the time of the crisis and showed interesting results. Most of the papers are dealing with the issuance of an audit opinion during financial crisis in 2007, which was one of the most significant events in the financial world in the 21st century.

Xu et al. (2011) examined whether the financial crisis in 2007 – 2009, with its uncertain economic development, had an impact on the expression of an audit opinion, especially on the one with a going concern modification. This is because global financial crisis led to a stagnation of the economic development, which consequently led to an increased business risk and so represented a challenge for an entity to continue its operations as a going concern. The study investigated audit reports of Australian companies over a four-year period in 2005 – 2009, so that a better comparability with the audit opinions before and after the crisis could be demonstrated. The results of the paper showed that the number of unmodified opinions was very stable before the crisis until 2006, but has fallen by 8% after 2007. Further results show that there was also an increased number of unqualified audit opinion with an emphasis of matter paragraph by almost 10% in 2009 compared to the years before the crisis, whereas 90% of those emphasis of matter paragraphs were issued due to problems with going concern. A similar study was conducted in Spain, where Mareque et al. (2017) examined audit opinions of Spanish unlisted companies with a focus on modifications because of going concern issues. The hypothesis, that a financial crisis increases the issuance of modified audit opinions, could be verified and the results showed a dramatic raise in unqualified audit opinions with an emphasis of matter paragraph from 9% in 2007 to 67% in 2008. Furthermore, the paper researched also different variables such as audit firm, auditor switching and audit reports among various industry sectors. In the context of various industry sectors, the construction sector showed the biggest difficulties after the start of a financial crisis, whereas the modifications of an audit opinion due to going concern matters raised from 2% in 2007 to 20% in 2009. Regarding a big four audit firm or a non-big four audit firm, the analysis is proving that a big four company is more likely to issue qualified audit opinion.

Another aspect that plays an important role in the formation of an audit opinion is the characteristics of the auditor responsible for the entity. Sanoran (2018) conducted a study, where he analyzed the issuance of a modified audit opinion before, during and after the global financial crisis with a special focus on the auditor characteristics. The reason for this was an increased negative opinion about the quality of an audit during a financial crisis. Many experts argued that an indirect reason, why the global financial crisis occurred, is the failure in auditing profession, pointing out that most of the big investment banks, that failed in 2007, did not indicated any modifications in the audit opinion the year before. The results of this study show that non-big four auditors have become more conservative after the global financial crisis, since they tend to issue more qualified opinions to firms that failed the year after than the big four auditors. A similar paper regarding the relationship between the type of an auditor and the going concern modifications in the audit opinion was published by Beams & Yan (2015). The motivation to do the research on this topic was similar to the previous paper, since the industry statistics showed that only 40% of the companies, that filed for bankruptcy, received a modified audit opinion in the year prior. This points out to an ongoing challenge of the audit profession. On the one hand, if an auditor issues a going concern audit opinion too early, he might lose the client. However, on the other hand, if an auditor does not issue a modified audit opinion because of going concern matters and the company fails, he might lose his reputation and trust of the market. It is also important to note that in certain degree, an audit opinion is a matter of subjectivity and could be influenced by the audit environment such as type of the auditor or current regulation changes in the market (Feldmann & Read, 2010). The results of the study by Beams & Yan showed that the auditor conservatism to express modified audit opinion by going concern increased in the period 2008 – 2010, both for non-big four and big four audit firms. However, after the 2010, when the crisis started to ease, one can observe the same audit behavior as before the crisis.

A similar approach to analyze the relationship between the auditor and the audit opinion was used in the paper by Tagesson & Öhman (2015), who investigated Swedish companies and the likelihood to issue a going concern modified audit opinion, but with further factors such as audit fees and the formal auditor competence. This study points out to a slightly different issue than those discussed earlier, namely whether higher audit fees demonstrate a sign of an effort or the auditor's

independence. The research demonstrates that the number of going concern modified opinions raises along with an increased audit fee and the time spent on the audit, since higher audit fees tend to provide better knowledge about the audited company. It also shows that the issuance of a modified opinion does not signal a threat to auditor's independence. Furthermore, this study also provides an evidence that big four audit firms serve a better-quality audit than non-big four audit firms.

Another study conducted in Turkey by Sultanoglu et al. (2018) investigates the relationship between a modified audit opinion and the type of an auditor together with the client size and the degree of financial distress of the audited company during a domestic crisis (2000 – 2002) and global financial crisis (2007 – 2009). The outcomes show that the number of modified audit opinions was significantly higher during the domestic crisis than during the global financial crisis. The reason for that could be lessons learned during the former crisis, which could be implied in the latter crisis. On a contrary to previous studies, the type of an audit firm (big four or non-big four) does not have an impact on the issuance of a modified audit opinion. However, the level of financial distress and the size of the audited entity have a significant influence on audit opinions in both periods.

An extended research that deals with the relationship between the audit opinion and the type of an auditor during global financial crisis was conducted by Sundgren & Svanström (2013). The main idea of this study is to analyze whether there is a negative correlation between the number of assignments held by the auditor and the auditor's age, since audit industry is characterized with a high level of clients that have to be audited in a short period of time. An increased number of assignments decreases the average time spend on each one, which serves the auditor with insufficient time to audit significant events that may lead to going concern modifications in the audit opinion. The sample consists of companies that filed for bankruptcy in 2008 and 2009, whereas 15% of them received a going concern modified audit opinion the year before, which was an indicator of an audit quality. The results demonstrate that the number of active assignments have an impact on the modification of an audit opinion, claiming that audit firms with less than 200 clients expressed a going concern modified opinion to 16,6% of their clients, whereas companies with

more than 2000 clients did so only to 8,1% of clients. In terms of the auditor's age, findings show that older auditors tend to express fewer going concern modified audit opinions. The reason for this could be that going concern reporting is a new standard so older auditors might have difficulties understanding it properly.

Another important topic in terms of issuing a going concern modified audit opinion is the audit environment, in particular the market view about the audit industry. Since audit report is the only way of communicating the result to the broad public, it is in certain way a tool for the communication of possible risks. Blay et al. (2011) analyze the impact of the first-time going concern modified audit opinion for financial distressed firms on the market view of such entities. It is true that if an auditor expresses a modified audit opinion, the market views the auditing entity consequently as not reliable. This has a negative influence on such entity, since many stakeholders could lose interest in it. The study finds out that the market puts much value on how the auditor evaluates the business risk of an entity and whether he expresses a first-time going concern modified audit opinion. According to this study, auditor's opinion on a financial distress of an audited entity provides more value than any other financial indicator in the annual statement.

The relationship between the audit environment and the probability to issue a modified audit opinion was already researched at the beginning of the 21st century, when Fargher & Jiang (2008) examined the impact of the corporate collapse in the period 2000 – 2002 on the audit opinion. The results of this study demonstrated that auditors tend to issue more going concern modified audit opinions after 2001 than prior the corporate collapse; and that they became more conservative even after the corporate crisis ended.

A further analysis about the audit environment was conducted by Sikka (2009), where the author seeks to find out how the audit opinion could be influenced by certain collapses in the economy. The main motivation to conduct this research was the financial crisis in 2007, which raised many questions about the work of external auditors. Whilst many conservative experts claimed that external audit adds more assurance and reliability to the financial status of the companies, the events during the global financial crisis showed however certain shortcomings of the audit profession, as

many companies that failed during the crisis did not receive a qualified audit opinion the year before. There are many examples of big companies that failed few months after receiving an unqualified opinion. For instance, Lehman Brothers received an unqualified audit opinion by the end of January 2008 on their 2007 annual statement, however failed for insolvency in August 2008. Another important investment bank in America, Bear Stearns, also received an unqualified opinion in January 2008, yet announced financial problem at the beginning of March 2008 and had to be sold to JP Morgan Chase few days later. Such events lead to increased criticism of audit profession and raise many questions on how auditors shall approach such issues.

4.1 Hypothesis development on audit opinion

The previous section that summarizes several studies, on how the global financial crisis impacted the audit opinion, has showed that an economic breakdown has a significant influence on the audit opinion. Even though the global financial crisis was caused by a collapse in the financial system and was rather a demand shock, it shows certain similarities to the Covid-19 crisis that started in 2020. For this reason, the results from the previous research will be used to develop hypotheses concerning the Covid-19 crisis.

Based on the findings by Xu et al. (2011), Mareque et al. (2017) and Fargher & Jiang (2008), there is a clear evidence that crisis has a negative impact on the audit opinion, proving that there is a dramatic increase in emphasis of matter paragraphs for going concern in an audit opinion during and after crisis. Thus, the following hypothesis is formulated:

H1: The likelihood of issuing an unqualified audit opinion with an emphasis of matter paragraph for going concern increases during the Covid-19 crisis period.

According to Sanoran (2018), Sultanoglu et al. (2018) and Beams & Yan (2015), further findings claim that there are differences in issuing a modified audit opinion by different audit firms. The results of these studies show that big four audit firms tend to be more conservative than the non-big four auditors during the crisis; therefore, the following hypothesis is formulated:

H2: The likelihood of issuing an unqualified audit opinion with an emphasis of matter paragraph for going concern by a big four audit firm during the Covid-19 crisis period is higher than by other non-big four audit firm.

Furthermore, Xu et al. (2011) and Mareque et al. (2017) claim that during the global financial crisis, certain industry sectors show higher percentage of modified audit opinions for going concern than other industry sectors. Hence, the following hypothesis is formulated:

H3: There are differences between the industry sectors in terms of the likelihood of issuing unqualified audit opinion with an emphasis of matter paragraph for going concern.

5. Literature review on key audit matters

According to the International Standard on Auditing 701, the auditor is required to select the most significant matters during the reporting period and communicate them as key audit matters in the auditor's report. The selection of key audit matters shall happen by the auditor's professional judgement, however the focus shall be on matters with the highest risk. In this respect, Hojatifrad et al. (2019) states that auditor's professional judgement is to a certain level subjective and influenced by several factors. It is true that if an inappropriate judgement is formulated, such event could have a negative impact on the audit quality. Sierra-García et al. (2019) discussed in their paper the Hogarth's theory, which could be used as an explanation how auditors approach the selection process of key audit matters reported in the audit statement. The theory shows that the decision-making process within this matter is being made based on the auditor's experience, known rules, the audit strategy and the client's characteristics. However, the most important aspect is the experience, especially the number of years when the auditor performs professional judgement. Therefore, the author claims that more experienced auditors tend to do better when performing the selection of key audit matters.

Another aspect that plays an important role within the scope of the International Standard on Auditing 701, is the consideration of the client risk that is essential when selecting key audit matters for the auditor's report. According to Sierra-García et al. (2019), thy type of industry, where the audited company is active, does have an impact on the risk assessment. The authors claim that certain industry sectors are more complex than the others, which leads to higher risk acceptance.

Furthermore, there have been conducted several studies in the recent years on the disclosure of key audit matters, since it is a new legislation within the European Union as well as internationally. Kitiwong & Sarapaivanich (2020) studied whether there is a relationship between the disclosure of key audit matters and an increased audit quality since key audit matters require auditors to assess the most significant entity's risks in more detail. The authors argue that the disclosure of key audit matters is an important milestone within the reform of an audit industry, because it increases auditor's credibility as well as the transparency of the annual report. It also encourages auditors to receive better audit evidence, which also leads to a better audit quality. The results of this study showed that the there is a difference between key audit matters among various industries. It also

showed that the average number of key audit matters was between two and three, whereas the matters mostly addressed similar topics during the first two years of the mandatory disclosure. Regarding the audit quality, the findings showed that there was an evidence of increased litigation risk, which consequently lead the senior audit staff to evaluate key audit matters together with the client more precisely. Accordingly, the expanded engagement's commitment contributes to an enhanced audit quality. Finally, the results point out that the number of key audit matters does not impact the audit quality.

Another interesting research in the field of communication of key audit matters was done by Sierra-García et al. (2019), who analyzed in what extent the client characteristics or audit fees influence key audit matters. The motivation for this study is previous research that also point out to increased audit fees after the application of the ISA 701. Firstly, the findings showed that PwC tends to issue more key audit matters than any other big four audit firm. Secondly, companies that pay rather higher audit fees do have more entity-level key audit matters in their reports. In this respect, entity-level key audit matters refer to the risk of the entity as a whole, whilst account-level key audit matters refer to the risk of a specific account. Moreover, the study proves that client and auditor characteristics are responsible for the determination of the number and type of key audit matters.

As already mentioned before, the aim of the new standard on key audit matters is to enhance the informative value of the auditor's report and to enable the users of financial information to better understand the business of an entity. In this context, Pinto et al. (2020) published a paper that deals with the relationship of key audit matters and the precision level of an accounting standard. Moreover, it also studies the level of readability and the general understanding of key audit matters. According to author, most of the accounting standards are principle-based, however some of them could be also categorized as rule-based, since they include more rules. There is still an ongoing discussion in terms of the accounting standard system. On the one hand, some argue that rule-based system allows for better comparability of financial information and decreases litigation risk of auditors. On the other hand, many experts are against the rule-based system, claiming that principle-based systems could be used for different industries so that a better comparability is achieved.

The results prove that key audit matters with rather rule-based standards are considered to be harder to read than the principle-based standards. However, it also shows that the number of key audit matters reported increases, if the significant matters refer to rule-based standards.

5.1 Hypothesis development on key audit matters

Based on the findings in the previous research, the client and auditor characteristics tend to have an impact on the number of key audit matters, therefore, following hypothesis are formulated:

H4: The total number of KAMs disclosed in the audit report is determined by auditor and client characteristics.

H5: The number of each type of KAM included in the audit report is determined by auditor and client characteristics.

6. Research design

This study applies quantitative research method and analyzes auditor`s reports in financial statements. Quantitative research focuses on collecting bigger amount of data and since the sample consists of financial statements of various companies, it is the appropriate approach. Furthermore, the research design in this paper is divided into two main parts. First part analyzes audit reports with descriptive statistics, whereas second part uses linear regression model to test the hypotheses. The following section deals with a detailed description of both research methods.

6.1 Empirical models

6.1.1 Descriptive statistics

The first part of the research design is analyzed with descriptive statistics. Firstly, the type of an audit opinion expressed in the report is critically analyzed. As stated in the previous section, according to HGB § 322, each audit opinion will be coded with one of the two main types of qualification, namely an unqualified or qualified audit opinion. Each of these opinions will be than further coded with additional amendments (§ 322 II 1 HGB). However, the main objective is to investigate whether there is an increased number of audit opinions with going concern issues during the Covid-19 period. Secondly, key audit matters disclosed in the audit report will be analyzed.

6.1.2 Linear regression model

Hypotheses H4 and H5 are tested using a linear regression model. This method was chosen since it considers a broad number of different variables and reflects their relationship, plus it includes a control function for time effects. For this reason, the impact of auditor and client characteristics is being analyzed with the linear regression. This study uses the model by Sierra-García et al. (2019) and so no preliminary tests are performed in order to identify the best possible method.

Following Lennox et al. (2021), the key audit matters disclosed in the auditor`s report are further categorized in ELRKAM and ALRKAM, whereas the former refers to matters with risk of an entity as a whole and the latter refers to risks associated with single accounts.

Hypothesis H4 is tested using the following model:

$$\begin{aligned}
 \#KAM_{i,t} = & \beta_0 + \beta_1 AUDIT\ FIRM_{i,t} + \beta_2 AUDIT\ FEES_{i,t} + \beta_3 NON - AUDIT\ FEES\ RATIO_{i,t} \\
 & + \beta_4 SWITCH_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 LEVERAGE_{i,t} + \beta_7 CURRENT\ RATIO_{i,t} \\
 & + \beta_8 ROA_{i,t} + \beta_9 LOSS_{i,t} + \beta_{10} COMPLEXITY_{i,t} + \beta_{11} REVENUES_{i,t} \\
 & + \beta_{12} INVENTORIES_{i,t} + \beta_{13} PPE_{i,t} + \beta_{14} GOODWILL_{i,t} \\
 & + \beta_{15} INTANGIBLES_{i,t} + \beta_{16} INDUSTRY_{i,t} + \beta_{17} CRISIS_{i,t} \\
 & + CONTROLS\ (YEAR - END, YEARS) + u_{i,t}
 \end{aligned}$$

Hypothesis H5 is tested using the following model:

$$\begin{aligned}
 \#ELRKAM_{i,t} = & \beta_0 + \beta_1 AUDIT\ FIRM_{i,t} + \beta_2 AUDIT\ FEES_{i,t} \\
 & + \beta_3 NON - AUDIT\ FEES\ RATIO_{i,t} + \beta_4 SWITCH_{i,t} + \beta_5 SIZE_{i,t} \\
 & + \beta_6 LEVERAGE_{i,t} + \beta_7 CURRENT\ RATIO_{i,t} + \beta_8 ROA_{i,t} + \beta_9 LOSS_{i,t} \\
 & + \beta_{10} COMPLEXITY_{i,t} + \beta_{11} GOODWILL_{i,t} + \beta_{12} INDUSTRY_{i,t} + \beta_{13} CRISIS_{i,t} \\
 & + CONTROLS\ (YEAR - END, YEARS) + u_{i,t}
 \end{aligned}$$

$$\begin{aligned}
 \#ALRKAM_{i,t} = & \beta_0 + \beta_1 AUDIT\ FIRM_{i,t} + \beta_2 AUDIT\ FEES_{i,t} \\
 & + \beta_3 NON - AUDIT\ FEES\ RATIO_{i,t} + \beta_4 SWITCH_{i,t} + \beta_5 REVENUES_{i,t} \\
 & + \beta_6 INVENTORIES_{i,t} + \beta_7 PPE_{i,t} + \beta_8 INTANGIBLES_{i,t} + \beta_9 INDUSTRY_{i,t} \\
 & + \beta_{10} CRISIS_{i,t} + CONTROLS\ (YEAR - END, YEARS) + u_{i,t}
 \end{aligned}$$

$$u_{i,t} = \mu_i + e_{i,t}$$

6.2 Sample selection

The sample of this study consists of companies listed in the German SDAX stock index, which comprises of 70 small- to medium-sized entities in the German market. The reporting periods, that are taken into consideration, are years 2017- 2020. The reason to choose the SDAX index is because it is expected that rather small- or medium-sized companies are more likely to have going concern issues than the biggest companies on the market.

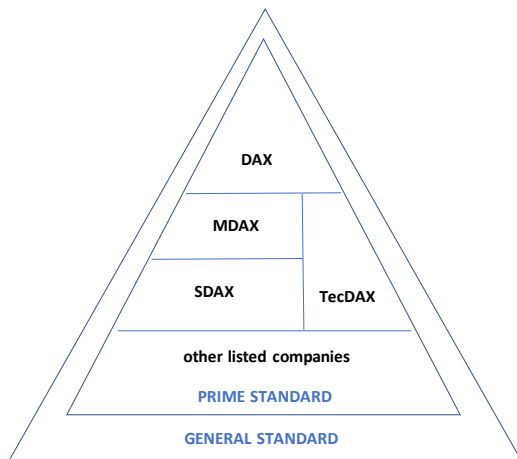
The total population for the study comprises of 280 company-years. For the absolute sample used in this paper, following criteria are applied: companies that did not participate in the SDAX index throughout the whole study period (7 companies) are excluded and so the total sample for the descriptive statistics comprises of 63 companies or 252 company-years. Furthermore, since the linear regression model uses financial indicators in the analysis, a comparison between industry and financial companies could not be demonstrated. For this reason, companies operating in the financial sector (9 companies) are excluded and so the total sample for the linear regression model comprises of 54 companies or 216 company-years. The composition of the sample is illustrated in the following table.

Table 1: Composition of the sample

SDAX index companies	OBSERVATIONS
<i>Total population (2017- 2020)</i>	280
<i>Not listed throughout whole study period (7 companies)</i>	-28
Total sample for descriptive statistics (63 companies)	252
<i>Operating in financial sector (9 companies)</i>	-36
Total sample for linear regression model (54 companies)	216

6.2.1 German stock index

Picture 1: German stock index



Source: Boerse.de, 2021

As shown in the picture above, the well-known Frankfurt's stock market consists of the two main parts, namely the prime standard and the general standard. The prime standard represents the biggest companies according to their trade volume and market capitalization. Furthermore, this segment sets higher entry requirements mostly relating to language and transparency matters, as most of the companies included here are present on the international market and so dispose of a broader variety of stakeholders from different countries. The prime standard is also considered as the toughest market to enter not only in Germany, but also in the whole Europe (Deutsche Boerse Cash Market, 2021).

The general standard summarizes the rest of the listed companies on the Frankfurt's stock market. In general, this segment represents rather small- to medium-sized companies that aim to attract national stakeholders and want to be part of the cost-efficient listing (Deutsche Boerse Cash Market, 2021).

Besides these two main segments, the prime standard is further subdivided into four biggest stock indexes, namely the DAX, MDAX, TecDAX and SDAX.

DAX index is the leading stock index on the German market and consists of the 30 biggest German listed companies. The size of the companies is based on their market revenue and market capitalization. All the 30 companies listed in the DAX index have to fulfil strict criteria. Each one has to belong to prime standard and show a free float bigger than 10%. Not to mention, another very important requirement is that the legal domicile is located within Germany. The decision about the structure of the DAX index is normally scheduled once a year, typically in September (Finanzen.net, 2021).

The second biggest German index is the MDAX index. This index follows the DAX index and consists of 60 German listed companies. The performance of these companies is evaluated every year. In a case the entity shows a strong performance over the reporting period, it can be moved up to the DAX index. However, if the entity records rather a weak performance and there are other companies with stronger appearance not included in the MDAX index yet, it will be downgraded and will lose its position in this index (Boerse.de, 2021).

The third biggest and common German stock index is the SDAX, whose companies are building the sample of this thesis. This index consists of 70 German listed companies, that according to their market revenue and market capitalization follow the first 90 listed companies. It is a mixture of classic and technology sector companies (Stoxx, 2021).

Finally, the prime standard also consists of the TecDAX companies. This index represents a mixture of all other indexes; however, it only includes the 30 biggest technology companies. The evaluation of consisting values is made twice a year, namely in March and September (Boerse.de, 2021).

6.3 Study variables

6.3.1 Descriptive statistics variables

To identify the type of an audit opinion, there are three different variables, which also follow the model by Xu et al. (2011) and Mareque et al. (2017). The variable AUDIT OPINION differentiates between three main opinion types: it takes the value 0 if an auditor expresses unqualified audit opinion, 1 if the auditor expresses a qualified opinion and 2 if the auditor expresses an adverse or a disclaimer of an opinion.

The variable UNQUALIFIED AUDIT OPINION is then used if the variable audit opinion takes the value 0 and is further subdivided into value 0 if it is an unmodified opinion and 1 if it comes with an emphasis of matter paragraph for going concern.

The variable QUALIFIED AUDIT OPINION is used when the variable audit opinion takes the value 1 and is further subdivided into value 0 if it is qualified for going concern, value 1 if it is qualified for others, value 2 if it is qualified with an emphasis of matter for going concern and value 3 if it is qualified with an emphasis of matter for others.

Furthermore, the audit opinion variables are amended with additional variables comprising of client and auditor characteristics, which follows the models by Sanoran (2018), Beams & Yan (2015), Tagesson & Öhman (2015) and Sultanoglu et al. (2018). The variable AUDIT FIRM determines the name of the audit firm that is in charge for each company that is part of the sample. The variable BIG 4 further identifies the type of an audit firm and takes the value 0 if it is a big four audit firm (Deloitte, EY, KMPG, PWC) and value 1 if it is a non-big four audit firm (BDO, Warth & Klein Grant Thornton AG, Rödl & Partner GmbH, Ebner Stolz GmbH & Co Kg., Baker Tilly GmbH & Co. KG).

Another variable that represents client characteristics is the variable SECTOR. The categorization of sectors is based on the Global Industry Classification Standard (GICS), which builds a structure of 11 sectors. These sectors are energy, materials, industrials, consumer discretionary, consumer staples, health care, financials, information technology, communication services, utilities and real estate.

For the analysis of key audit matters, the variable KAM represents the total number of key audit matters disclosed in the auditor's report. The variable MEAN NUMBER OF REPORTED KAMs is measured as the average number of matters disclosed per sector, big four or non-big four audit firm and reporting year. The variable AUDIT REPORTS WITH ZERO KAMs summarizes audit reports without any key audit matters disclosed.

Moreover, the reported KAMs are further divided into categories based on the IFRS/IAS Standard (IAS2, IAS8, IAS12, IAS14, IAS18, IAS19, IAS36, IAS37, IAS38, IAS39, IAS40, IFRS2, IFRS3, IFRS5, IFRS8, IFRS9, IFRS10, IFRS13, IFRS15, IFRS16)- this is represented by the variable KAM IFRS/IAS STANDARD. The variable COVID-19 takes the value 0 if the key audit matter does not include the word "Covid-19" and value 1 if the key audit matter includes one or more words "Covid-19". Due to current economic development, it is expected that some standards are more likely to suffer issues that are in a connection with Covid-19 pandemic.

6.3.2 Linear regression variables

For the linear regression model, prior studies by Lennox et al. (2017) and Sierra-García et al. (2019) are considered as basis for this method.

6.3.2.1 Dependent variables

The dependent variable KAM, as already discussed in the previous section, represents the total number of key audit matters disclosed. The linear regression model however further divides this variable into ELRKAM and ALRKAM. ELKRAM as an entity-level risk variable refers to matters that contain risk of the entity as a whole. ALRKAM as an account-level variable on the other side refers to matters that focus on one single account in the financial statement. The categorization of key audit matters into ELRKAM and ALRKAM is summarized in the following table.

Table 2: Type of KAM disclosed in the audit report

Type of KAM disclosed in the audit report

ELKRAM	2020	2019	2018	2017	Total
IAS8 - Accounting Policies, Changes in Accounting Estimates and Errors	0	0	2	1	3
IAS12 - Income taxes	7	7	16	16	46
IAS14 - Segment reporting	0	0	0	0	0
IAS19 - Employee benefits	4	5	5	6	20
IFRS2 - Share-based payments	0	0	0	1	1
IFRS3 - Business combinations	9	9	13	18	49
IFRS8 - Operating Segments	1	0	0	0	1
IFRS10 - Consolidated Financial Statements	0	0	0	2	2
IFRS13 - Fair value measurement	1	2	2	1	6
Total ELRKAM	22	23	38	45	128
ALRKAM					
IAS2 - Inventories	6	6	6	7	25
IAS16 - Property, Plant and Equipment	2	1	1	1	5
IAS18 - Revenue	0	0	0	15	15
IAS36 - Impairment of assets	54	46	40	40	180
IAS37 - Provisions, Contingent Liabilities and Contingent Assets	11	8	10	15	44
IAS38 - Intangible assets	8	9	7	5	29
IAS39 - Financial Instruments: Recognition and Measurement	0	0	1	2	3
IAS40 - Investment property	3	3	3	3	12
IFRS5 - Non-current Assets Held for Sale and Discontinued Operations	1	2	2	2	7
IFRS9 - Financial instruments	9	9	13	11	42
IFRS15 - Revenue from contracts with customers	20	21	22	3	66
IFRS16 - Leases	6	6	1	1	14
Total ALRKAM	120	111	106	105	442
Total KAM	142	134	144	150	570

6.3.2.2 Explanatory variables

To be able to measure the impact of auditor and client characteristics on the number of reported key audit matters, following variables are taken into consideration.

Variables AUDIT FIRM and BIG4 (described in the previous section) are important parts of the model since they represent a strong factor within the auditor characteristics. The variable AUDIT FEES stands for the amount of money that the auditor charges for the provided services. The reason for this variable is that audit reports with more matters disclosed are more likely to include higher audit fees. The variable NAF RATIO represents the non-audit fees and is measured as the non-audit fees divided by the total audit fees. It is expected that higher non-audit fees are more likely to result in lower number of key audit matters in the auditor's report.

The variable SWITCH describes the process of an auditor switching from one year to another. If the value is 0, there was no change in the responsible auditor and if the value is 1, there was a change of an auditor compared to the previous year. This variable is taken into consideration because different auditors might include different number of matters in the report.

To consider the client characteristics within the linear regression model, variable SIZE is used as an indicator for the client size and is measured as total assets of the audited company. It is expected that larger clients are more likely to include more matters in their audit reports. As an indicator for the solvency of a client, the variable LEVERAGE is used and is calculated as a ratio of total debts to total assets. This variable could signal potential financial issues for higher leveraged clients and could indicate a higher number of reported matters in the audit report. Moreover, the variable CURRENT RATIO is applied as an indicator for liquidity and is calculated as total current assets divided by total current liabilities. Companies with higher liquidity are more likely to experience financial problems and thus include more key audit matters. An indicator for profitability represents the variable ROA, which is calculated as profit before taxes to total assets. The variable LOSS signals whether the client incurred a loss in the previous financial year and takes the value 0 if the client did not incur a loss and value 1 if he suffered a loss. Finally, the variable COMPLEXITY describes the number of client's subsidiaries and might indicate that more complex clients report a higher number of key audit matters.

In addition, following variables are used in order to evaluate the complexity of client's accounts and transactions: REVENUES, INVENTORIES, PROPERTY, PLANT AND EQUIPMENT (PPE), GOODWILL and INTANGIBLES. All these variables are calculated as natural algorithm of each of these items. Furthermore, the variable SECTOR (described in the previous section) is also used for the linear regression model.

Variables MATERIALITY and SPECIALSIT that were defined as explanatory variables by Sierra-García et al. (2019) won't be taken into scope of this study. Both variables weren't accessible in the financial statements, nor in the Thomson Reuters Eikon database.

6.3.2.3 Control variables

Variables YEAR-END and YEARS are considered as control variables. The variable YEAR-END takes the value 1 if the client's reporting date is on December 31 and value 0 on any other reporting date. This is because it is expected that clients who are reporting on December 31 during the busy

season might report less matters since auditors lack time for proper analysis of their most significant risks. The variable YEARS describes the actual year of the collected data (2017, 2018, 2019 and 2020).

6.4 Data sources

The data collected for this study is obtained from consolidated financial statements of companies participating in the SDAX index, which were accessed via each entity's homepage. The main source from the financial statements are auditor's reports. Furthermore, various financial indicators needed mainly for the linear regression model were collected through the Thomson Reuters Eikon database.

7. Descriptive statistics

7.1 Descriptive statistics for going concern

In order to test the first hypothesis, table 1 analyzes the frequency of audit reports by type of audit opinion within the study period 2017- 2020. The categorization in table 1 is based on the German commercial code §322, which defines several types of audit opinion, namely the unqualified opinion, qualified opinion and an adverse or disclaimer of an opinion. The H1 “*The likelihood of issuing an unqualified audit opinion with an emphasis of matter paragraph for going concern increases during the Covid-19 crisis period*” assumes, that due to negative economic development, the number of unqualified audit opinions with an emphasis of matter paragraph for going concern increases in 2020.

Table 3: Frequency of audit reports by type of report 2017-2020

Frequency of audit reports by type of report 2017-2020										
Audit opinion	Total		2020		2019		2018		2017	
	No.	%	No.	%	No.	%	No.	%	No.	%
Unqualified = 0	252	100%	63	100%	63	100%	63	100%	63	100%
Unmodified = 0	250	99%	62	98%	62	98%	63	100%	63	100%
With an emphasis of matter for going concern = 1	2	1%	1	2%	1	2%	0	0%	0	0%
Qualified = 1	0	0%	0	0%	0	0%	0	0%	0	0%
Qualified for going concern = 0	0	0%	0	0%	0	0%	0	0%	0	0%
Qualified (for others) = 1	0	0%	0	0%	0	0%	0	0%	0	0%
Qualified with emphasis of matter for going concern = 2	0	0%	0	0%	0	0%	0	0%	0	0%
Qualified with emphasis of matter (for others) = 3	0	0%	0	0%	0	0%	0	0%	0	0%
Adverse/disclaimer = 2	0	0%	0	0%	0	0%	0	0%	0	0%
Total number of audit reports	252	100%	63	100%	63	100%	63	100%	63	100%

The results show that no qualified opinion, adverse opinion or disclaimer of an opinion was expressed before the crisis period as well as during Covid-19 crisis period in 2020. Furthermore, the analysis shows that unqualified opinion with an emphasis of matter paragraph for going concern was expressed to one company in 2020, however the auditor expressed the same audit opinion already in 2019 to the same company. No further unqualified audit opinions with an emphasis of matter paragraph were issued throughout the whole study period. Based on the results from descriptive statistics, the hypothesis 1 is falsified since the number of unqualified audit opinions with an emphasis of matter paragraph for going concern remains the same during the Covid-19 crisis in 2020 compared with the pre-crisis period.

Table 4 shows an overview about the type of an emphasis of matter paragraph expressed during the study period. The results demonstrate that auditors in the sample expressed only the emphasis of matter paragraph for going concern and not because for any other reason.

Table 4: Type of emphasis of matter paragraphs 2017-2020

	<u>Total</u>		<u>2020</u>		<u>2019</u>		<u>2018</u>		<u>2017</u>	
	No.	%	No.	%	No.	%	No.	%	No.	%
Significant uncertainty regarding ability to continue as a Going Concern	2	100%	1	100%	1	100%	0	100%	0	100%
Significant uncertainty other than regarding the ability to continue as a Going Concern	0	0%	0	0%	0	0%	0	0%	0	0%
Total number of audit reports with an emphasis of matter	2	100%	1	100%	1	100%	0	100%	0	100%

To be able to test the second hypothesis, table 5 summarizes types of audit opinions expressed by various audit firms. The variable used for this table is type of audit firm, whereas Deloitte, EY, KPMG and PWC refer to big four audit firms and all other audit firms to non-big four audit firms. Based on the previous research, the H2 “*The likelihood of issuing an unqualified audit opinion with an emphasis of matter paragraph for going concern by a big four audit firm during the Covid-19 crisis period is higher than by other non-big four audit firm*” assumes, that big four audit firms are more likely to be conservative during and after a crisis period and issue a higher number of emphasis of matter paragraphs or qualified audit opinions.

The results of table 5 show that there is one unqualified audit opinion with an emphasis of matter paragraph for going concern issued in 2020 by Deloitte, which belongs to the big four audit firm category. Based on these findings, the H2 could be verified, since no other non-big four audit firm expressed an unqualified audit opinion with an emphasis of matter paragraph for going concern. It is however important to mention that there is only a weak evidence of differences between big four and non-big four ($1 > 0$) as only one big-four audit firm issued an emphasis of matter paragraph compared to zero emphasis of matter paragraphs by non-big four audit firm in 2020. A further analysis of table 5 demonstrates that big-four audit firms have a total average of 12,75 clients per year among the companies listed in the SDAX index. In a contrast, the non-big four firms audit only a total average of 2,4 clients per year. Among the big four audit firms, KPMG and PWC claim to have the highest market capitalization with 15 clients each in 2020, followed by EY with 12

clients and Deloitte with 9 clients. This order could be observed during the whole study period. In the context of non-big four audit firms, BDO with 6 clients in 2020 has clearly the highest number of engagements, followed by Ebner Stolz GmbH & Co Kg. with 3 clients.

Table 5: Types of audit reports by audit firm 2017-2020

Types of audit reports by audit firm 2017-2020

	<u>2020</u>				<u>2019</u>			
	Total	Unqualified	EoM	Qualified	Total	Unqualified	EoM	Qualified
PWC	15	15	0	0	15	15	0	0
EY	12	12	0	0	11	11	0	0
KPMG	15	15	0	0	17	17	0	0
Deloitte	9	8	1	0	8	7	1	0
Big Four Average	12,75	12,5	0,25	0	12,75	12,5	0,25	0
BDO	6	6	0	0	6	6	0	0
Warth & Klein Grant Thornton AG	1	1	0	0	1	1	0	0
Rödl & Partner GmbH	1	1	0	0	1	1	0	0
Ebner Stolz GmbH & Co Kg.	3	3	0	0	3	3	0	0
Baker Tilly GmbH & Co. KG	1	1	0	0	1	1	0	0
Non Big Four Average	2,4	2,4	0	0	2,4	2,4	0	0
Total	63	62	1	0	63	62	1	0

	<u>2018</u>				<u>2017</u>			
	Total	Unqualified	EoM	Qualified	Total	Unqualified	EoM	Qualified
PWC	17	17	0	0	15	15	0	0
EY	10	10	0	0	11	11	0	0
KPMG	16	16	0	0	16	16	0	0
Deloitte	8	8	0	0	8	8	0	0
Big Four Average	12,75	12,75	0	0	12,5	12,5	0	0
BDO	6	6	0	0	7	7	0	0
Warth & Klein Grant Thornton AG	1	1	0	0	1	1	0	0
Rödl & Partner GmbH	1	1	0	0	1	1	0	0
Ebner Stolz GmbH & Co Kg.	3	3	0	0	3	3	0	0
Baker Tilly GmbH & Co. KG	1	1	0	0	1	1	0	0
Non Big Four Average	2,4	2,4	0	0	1,5	1,5	0	0
Total	63	63	0	0	63	63	0	0

Table 6 shows an overview about types of audit reports by industry sector and tests the third hypothesis. The variable industry sector categorizes companies in the sample into various sectors in accordance with the Global Industry Classification Standard. Hypothesis 3 “*There are differences between the industry sectors in terms of the likelihood of issuing an unqualified audit opinion with an emphasis of matter paragraph for going concern*” assumes, that crisis might have a different impact on various industry sectors, which could be also demonstrated with the previous research described in the section 4.

The results of table 6 show that the unqualified audit opinion with an emphasis of matter paragraph for going concern was issued in the consumer discretionary sector in both years 2020 and 2019. Consumer discretionary sector includes automobiles & components, consumer durables and retailing. Based on these findings, the hypothesis 3 could be verified since the industry sector consumer discretionary proves to have a higher number of emphasis of matter paragraphs than any other sector. However, it is important to note that the difference between the industry sectors is very small and so the hypothesis 3 provides rather weak evidence.

Further analysis of table 6 shows that within the SDAX index, companies from industrial sector are building the majority with 22 firms out of 63. The second most represented sector is consumer discretionary, where 12 companies are categorized. The third most common sector are financials with 9 companies.

Table 6: Types of audit reports by industry sector

Types of audit reports by industry sector

Industry sector	Total	<u>2020</u>			Total	<u>2019</u>		
		Unqualified	EoM	Qualified		Unqualified	EoM	Qualified
		Unmodified				Unmodified		
Energy	1	1	0	0	1	1	0	0
Materials	2	2	0	0	2	2	0	0
Industrials	22	22	0	0	22	22	0	0
Consumer discretionary	12	11	1	0	12	11	1	0
Consumer staples	1	1	0	0	1	1	0	0
Health care	5	5	0	0	5	5	0	0
Financials	9	9	0	0	9	9	0	0
Information technology	4	4	0	0	4	4	0	0
Telecommunication services	3	3	0	0	3	3	0	0
Utilities	0	0	0	0	0	0	0	0
Real estate	4	4	0	0	4	4	0	0
Total	63	62	1	0	63	62	1	0

Industry sector	Total	<u>2018</u>			Total	<u>2017</u>		
		Unqualified	EoM	Qualified		Unqualified	EoM	Qualified
		Unmodified				Unmodified		
Energy	1	1	0	0	1	1	0	0
Materials	2	2	0	0	2	2	0	0
Industrials	22	22	0	0	22	22	0	0
Consumer discretionary	12	12	0	0	12	12	0	0
Consumer staples	1	1	0	0	1	1	0	0
Health care	5	5	0	0	5	5	0	0
Financials	9	9	0	0	9	9	0	0
Information technology	4	4	0	0	4	4	0	0
Telecommunication services	3	3	0	0	3	3	0	0
Utilities	0	0	0	0	0	0	0	0
Real estate	4	4	0	0	4	4	0	0
Total	63	63	0	0	63	63	0	0

7.2 Descriptive statistics for key audit matters

Table 7 presents the type of IAS/ IFRS standard for each key audit matter disclosed for the sample companies within the study period 2017 – 2020. The most frequent type of an accounting standard expressed by the auditor is the IAS 36 – Impairment of assets. This key audit matter usually concerns difficult estimations of the value in use of an to be impaired asset, which is a subject to auditor`s professional judgement, as well as the consideration of various external factors. The second most frequent type is IFRS15 – Revenue from contracts with consumers, which consists of contract agreements as well as various steps for the revenue recognition that might signal potential risks for the entity. IFRS 3 – Business combinations is the third most frequent type of an accounting standard identified as a key audit matter. It usually involves complex steps on how to account for acquired assets and liabilities, which are measured at the fair value. Other frequent accounting standards identified as a KAM by the auditor are IAS12 – Income taxes, IAS37 – Provisions, contingent liabilities & contingent assets and IFRS9 – Financial instruments.

Table 7: KAMs by accounting standard

KAMs by accounting standard

IAS/ IFRS Standard	Total	Number of reports with a KAM			
		2020	2019	2018	2017
IAS2 - Inventories	25	6	6	6	7
IAS8 - Accounting Policies, Changes in Accounting Estimates and Errors	3	0	0	2	1
IAS12 - Income taxes	46	7	7	16	16
IAS14 - Segment reporting	0	0	0	0	0
IAS16 - Property, Plant and Equipment	5	2	1	1	1
IAS18 - Revenue	15	0	0	0	15
IAS19 - Employee benefits	20	4	5	5	6
IAS36 - Impairment of assets	180	54	46	40	40
IAS37 - Provisions, Contingent Liabilities and Contingent Assets	44	11	8	10	15
IAS38 - Intangible assets	29	8	9	7	5
IAS39 - Financial Instruments: Recognition and Measurement	3	0	0	1	2
IAS40 - Investment property	12	3	3	3	3
IFRS2 - Share-based payments	1	0	0	0	1
IFRS3 - Business combinations	49	9	9	13	18
IFRS5 - Non-current Assets Held for Sale and Discontinued Operations	7	1	2	2	2
IFRS8 - Operating Segments	1	1	0	0	0
IFRS9 - Financial instruments	42	9	9	13	11
IFRS10 - Consolidated Financial Statements	2	0	0	0	2
IFRS13 - Fair value measurement	6	1	2	2	1
IFRS15 - Revenue from contracts with customers	66	20	21	22	3
IFRS16 - Leases	14	6	6	1	1
Total	570	142	134	144	150

In terms of the number of reported key audit matters per audit report, table 8 summarizes the mean number of KAMs per industry sector and per big four or non-big four company. The findings

demonstrate that there was a decrease in the mean number of reported KAMs by big four companies, whereas in 2017 the mean number was 2,64 and in 2020 2,31. The mean number of reported KAMs by non-big four companies is quite stable over the reporting period. Furthermore, the results show that big four companies report a higher number of key audit matters than the non-big four firms. A comparison of the various industry sectors in 2020 shows that the highest number of KAMs is reported for the telecommunication services companies with a mean number of 3,33 by a big four company. On the other hand, the lowest mean number of KAMs identified by a big four company in 2020 is 1,95 for industrial companies.

Table 8: Mean number of reported KAMs

Mean number of reported KAMs

Sector/ Audit firm	Energy	Materials	Industrials	Consumer discretionary	Consumer staples	Health care	Financials	Information technology	Telecommunication services	Utilities	Real estate	All sectors
Big Four 2020	3,00	3,00	1,95	2,70	2,00	3,00	2,33	2,33	3,33	-	1,67	2,31
Non-Big Four 2020	-	-	1,00	1,50	-	2,25	2,33	2,00	-	-	2,00	2,00
Big Four 2019	3,00	2,00	1,81	2,60	3,00	3,00	2,17	2,33	3,00	-	1,67	2,18
Non-Big Four 2019	-	-	2,00	1,50	-	2,25	1,67	2,00	-	-	3,00	2,00
Big Four 2018	4,00	3,00	2,10	-	4,00	3,00	2,67	2,33	3,33	-	2,00	2,49
Non-Big Four 2018	-	-	1,00	-	-	2,25	1,67	2,00	-	-	1,00	1,75
Big Four 2017	5,00	4,50	2,33	2,80	4,00	3,00	2,00	3,33	3,50	-	1,67	2,64
Non-Big Four 2017	-	-	3,00	2,00	-	1,75	2,00	2,00	3,00	-	1,00	2,00

Table 9 summarizes the number of cases of audit reports without any key audit reports identified. The results show that for financial companies, there were 4 audit reports within the whole study period without any KAM reported by an auditor. In 3 out of 4 cases, the auditor was a non-big four company, which might point out to a lower quality audit.

Table 9: Number of cases of audit reports with zero KAMs

Number of cases of audit reports with zero KAMs

Sector/ Audit firm	Energy	Materials	Industrials	Consumer discretionary	Consumer staples	Health care	Financials	Information technology	Telecommunication services	Utilities	Real estate	All sectors
Big Four 2020	0	0	1	0	0	0	0	0	0	0	0	1
Non-Big Four 2020	0	0	0	0	0	0	0	0	0	0	0	0
Big Four 2019	0	0	0	0	0	0	0	0	0	0	0	0
Non-Big Four 2019	0	0	0	0	0	0	1	0	0	0	0	1
Big Four 2018	0	0	0	0	0	0	0	0	0	0	0	0
Non-Big Four 2018	0	0	0	0	0	0	1	0	0	0	0	1
Big Four 2017	0	0	0	1	0	0	1	0	0	0	0	2
Non-Big Four 2017	0	0	0	0	0	1	1	0	0	0	0	2

A further analysis of the number of reported KAMs per year is summarized in table 10. The results indicate that in all study years, most of the auditors issued 2 or 3 key audit matters in audit reports.

For example, in 2020 33% of the reports consist of 3 key audit matters and 32% of 2 key audit matters. A similar behavior could be observed in 2019, where 46% of reports included 2 key audit matters and 30% of reports included 3 key audit matters. The third most common category are reports with 1 key audit matter, whereas for instance in 2020, 24% of all the reports consisted of only 1 key audit matter.

Table 10: Frequency of Key Audit Matters (KAMs) per year

Frequency of Key Audit Matters (KAMs) per year

KAM (Number)	2020		2019		Year 2018		2017		Total	
	N	%	N	%	N	%	N	%	N	%
KAM (0)	1	2%	1	2%	1	2%	4	6%	7	3%
KAM (1)	15	24%	12	19%	11	17%	6	10%	44	17%
KAM (2)	20	32%	29	46%	27	43%	20	32%	96	38%
KAM (3)	21	33%	19	30%	14	22%	23	37%	77	31%
KAM (4)	6	10%	2	3%	9	14%	7	11%	24	10%
KAM (5)	0	0%	0	0%	1	2%	3	5%	4	2%
Total	63	100%	63	100%	63	100%	63	100%	252	100%

Another important aspect of this thesis is the impact of Covid-19 pandemic on the audit opinion. For this reason, the following table summarizes the frequency of the word “Covid-19” in the reported key audit matters in 2019 and 2020.

Table 11: „Covid-19“ frequency in the reported KAMs 2020/2019

“Covid-19” frequency in the reported KAMS 2020/ 2019

Audit firm/ IFRS Standard	2020				2019	
	With "Covid-19"	Total	With "Covid-19"	With "Covid-19"	Total	With "Covid-19"
			%			%
IAS2 - Inventories	1	6	17%	0	6	0%
IAS8 - Accounting Policies, Changes in Accounting Estimates and Errors	0	0	0%	0	0	0%
IAS12 - Income taxes	2	7	29%	0	7	0%
IAS14 - Segment reporting	0	0	0%	0	0	0%
IAS16 - Property, Plant and Equipment	0	2	0%	0	1	0%
IAS18 - Revenue	0	0	0%	0	0	0%
IAS19 - Employee benefits	0	4	0%	0	5	0%
IAS36 - Impairment of assets	14	54	26%	0	46	0%
IAS37 - Provisions, Contingent Liabilities and Contingent Assets	2	11	18%	0	8	0%
IAS38 - Intangible assets	0	8	0%	0	9	0%
IAS39 - Financial Instruments: Recognition and Measurement	0	0	0%	0	0	0%
IAS40 - Investment property	0	3	0%	0	3	0%
IFRS2 - Share-based payments	0	0	0%	0	0	0%
IFRS3 - Business combinations	0	9	0%	0	9	0%
IFRS5 - Non-current Assets Held for Sale and Discontinued Operations	1	1	100%	0	2	0%
IFRS8 - Operating Segments	0	1	0%	0	0	0%
IFRS9 - Financial instruments	3	9	33%	0	9	0%
IFRS10 - Consolidated Financial Statements	0	0	0%	0	0	0%
IFRS13 - Fair value measurement	1	1	100%	0	2	0%
IFRS15 - Revenue from contracts with customers	3	20	15%	0	21	0%
IFRS16 - Leases	0	6	0%	0	6	0%
Total	27	142	19%	0	134	0

The findings in the table 11 show that even though there were first signs of the pandemic in 2019, no key audit matter mentioned any issue related to the pandemic. This was however expected since the sample consists of German companies, whereas in 2019, the pandemic only spread in the China and very few cases in Europe. In 2020, as the pandemic spread all around the world, 19% of all key audit matters included the word “Covid-19”. For example, the most frequent accounting standard -IAS 36 – reported 26% cases with an appearance of the word “Covid-19”.

Table 12: Sample companies distributed by the number of KAMs

Sample companies distributed by the number of KAMs								
#KAM	#OBS	TOTAL KAM	AUDIT FEES (€M)	NAF RATIO	TOTAL ASSETS (€M)	LEVERAGE	CURRENT RATIO	ROA (%)
0	3	0	0,667	0,067	1394,467	0,444	2,028	10,48%
1	41	41	0,512	0,155	1947,476	0,396	1,957	8,12%
2	83	166	0,758	0,085	2082,136	0,225	2,060	6,38%
3	62	186	0,990	0,125	2492,068	0,208	2,275	5,33%
4	23	92	2,187	0,048	6311,426	0,192	1,711	3,52%
5	4	20	0,275	0,000	8435,725	0,226	1,583	2,79%
Total	216	505	0,920	0,104	2732,690	0,252	2,056	6,09%

Furthermore, an analysis of the distribution of sample companies by the number of key audit matters per report was done. Table 12 shows the total mean values as follows: total assets EUR 2.73 billion; leverage 0.25; current ratio 2.06; ROA 6.09%. On average, the sample companies paid EUR 0.92 million to auditors for audit fees; the average non-audit fee ratio is 0.10. Table 12 also demonstrates that 67,12% of sample companies reported 2-3 key audit matters in the audit statement. Whilst the average audit fee for 2 KAMs companies is below the total sample average, the average audit fee for 3 KAMs companies lays slightly above with EUR 0.99 million – this might signal that audit companies that disclose a higher number of key audit matters also charge higher audit fees.

Table 13: Sample companies distributed by the number of ELRKAMs

Sample companies distributed by the number of ELRKAMs								
#KAM	#OBS	TOTAL ELRKAM	AUDIT FEES (€M)	NAF RATIO	TOTAL ASSETS (€M)	LEVERAGE	CURRENT RATIO	ROA (%)
0	131	0	0,880	0,075	3023,447	0,284	2,151	6,74%
1	63	63	0,940	0,174	2039,440	0,206	1,942	5,26%
2	21	42	1,105	0,075	2771,110	0,182	1,841	4,75%
3	1	3	1,000	0,000	7511,500	0,438	1,243	1,24%
Total	216	108	0,920	0,104	2732,690	0,252	2,056	6,09%

Table 13 shows the distribution of sample companies by the reported ELRKAMs (entity-level key audit matters) per audit report. The results reveal that 38.89% of sample companies disclose 1-2 ELRKAMs per audit report. It is however interesting to mention that 60.65% of sample companies do not disclose any ELRKAMs at all and pay an average audit fee EUR 0.88 million, which is a little lower than the total mean average audit fee (EUR 0.92 million).

Table 14: Sample companies distributed by the number of ALRKAMs

Sample companies distributed by the number of ALRKAMs								
#KAM	#OBS	TOTAL ALRKAM	AUDIT FEES (€M)	NAF RATIO	TOTAL ASSETS (€M)	LEVERAGE	CURRENT RATIO	ROA (%)
0	4	0	0,600	0,050	1205,500	0,392	2,276	9,49%
1	80	80	0,611	0,152	2055,284	0,314	1,843	7,20%
2	99	198	0,873	0,090	2159,069	0,205	2,126	5,77%
3	24	72	1,725	0,031	4670,617	0,244	2,732	3,65%
4	8	32	2,450	0,050	9995,975	0,180	1,324	4,93%
5	1	5	0,000	0,000	15206,000	0,264	0,885	3,79%
Total	216	387	0,920	0,104	2732,690	0,252	2,056	6,09%

Table 14 on the other side shows the distribution of sample companies by the number of ALRKAMs (account-level key audit matters). A comparison with ELRKAMs shows that sample companies disclose ALRKAMs more frequent than the ELRKAMs – only 1.85% of sample companies did not disclose any ALRKAM at all compared to 60.65% that did not disclose any ELRKAM. Moreover, table 14 also shows that 82.87% of sample companies report 1-2 ALRKAMs per audit statement. These companies also pay a lower average audit fee than the total sample average and are rather of a smaller size (total assets) than the total average. Sample companies that disclose the second highest number of ALRKAMs (4) also pay the highest average number of audit fees (EUR 2.45 million) and have a much higher total assets (EUR 9.99 billion) than sample average total assets (EUR 2.73 billion).

8. Linear regression

Tables 15, 16, 17 and 18 summarize the Pearson correlations for KAMs, ELRKAMs and ALRKAMs as well as the variance inflation factor (VIF) with the tolerance values for all variables (1/VIF) to test the hypothesis H4 and the hypothesis H5. The results show that even though the correlations are significant, they are not strong enough to demonstrate a very positive relationship.

Table 15: Pearson correlations for KAMs

Pearson correlations (KAMs)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
A - #KAMs		1,00																				
B - Index		-0,02	1,00																			
C - AUDITFIRM		-0,16	0,07	1,00																		
D - SWITCH		0,04	-0,04	-0,11	1,00																	
E - INDUSTRY		0,15	0,31	0,16	-0,07	1,00																
F - YEAREND		-0,11	-0,06	0,24	0,03	-0,09	1,00															
G - YEAR		-0,14	0,00	-0,02	0,16	0,00	0,00	1,00														
H - CRISIS		-0,06	0,00	-0,01	0,13	0,00	0,00	0,77	1,00													
I - NONAUDITFEESRATIO		-0,08	-0,05	-0,09	-0,04	-0,19	0,07	0,02	0,03	1,00												
J - AUDITFEES		0,38	-0,03	-0,34	0,06	0,11	-0,06	0,06	0,05	-0,02	1,00											
K - INVENTORIES		0,22	0,19	-0,11	0,12	0,31	-0,04	0,05	0,03	-0,12	0,35	1,00										
L - REVENUE		0,36	-0,02	-0,25	0,08	0,23	-0,28	0,03	0,01	-0,11	0,65	0,58	1,00									
M - PPE		0,27	0,07	-0,27	0,07	0,37	-0,31	0,14	0,10	-0,15	0,52	0,63	0,84	1,00								
N - GOODWILL		0,23	-0,09	-0,06	0,00	-0,06	0,03	0,14	0,10	0,01	0,48	0,31	0,46	0,38	1,00							
O - INTANGIBLES		0,37	0,00	-0,12	0,09	0,06	-0,10	0,10	0,07	-0,03	0,36	0,46	0,52	0,49	0,56	1,00						
P - SIZE		0,32	-0,12	-0,26	0,06	0,00	-0,19	0,08	0,05	-0,05	0,68	0,38	0,80	0,66	0,48	0,42	1,00					
Q - CURRENTRATIO		-0,01	0,25	0,10	-0,04	0,16	0,09	-0,07	-0,03	-0,04	0,04	0,06	-0,13	-0,09	-0,05	-0,07	-0,11	1,00				
R - LEVERAGE		-0,15	-0,11	0,08	0,03	-0,12	0,02	0,11	0,04	0,00	-0,08	-0,12	-0,07	-0,06	-0,06	-0,14	0,02	-0,12	1,00			
S - ROA		-0,19	-0,10	0,04	0,06	-0,15	0,01	-0,23	-0,20	-0,06	-0,22	-0,27	-0,25	-0,30	-0,04	-0,21	-0,33	0,15	0,01	1,00		
T - LOSS		0,09	0,14	-0,07	0,04	0,27	-0,05	0,28	0,28	-0,06	0,13	0,15	0,18	0,21	-0,07	0,02	0,16	-0,09	-0,01	-0,56	1,00	
U - COMPLEXITY		0,32	-0,20	-0,11	-0,02	0,03	-0,31	0,04	0,04	0,08	0,48	-0,03	0,55	0,34	0,31	0,15	0,61	-0,13	0,00	-0,09	0,05	1,00

Table 16: Pearson correlations for ELRKAMs

Pearson correlations (ELRKAMs)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
A - #ELRKAMs		1,00																				
B - Index		-0,13	1,00																			
C - AUDITFIRM		-0,12	0,07	1,00																		
D - SWITCH		-0,10	-0,04	-0,11	1,00																	
E - INDUSTRY		0,11	0,31	0,16	-0,07	1,00																
F - YEAREND		0,09	-0,06	0,24	0,03	-0,09	1,00															
G - YEAR		-0,24	0,00	-0,02	0,16	0,00	0,00	1,00														
H - CRISIS		-0,16	0,00	-0,01	0,13	0,00	0,00	0,77	1,00													
I - NONAUDITFEESRATIO		0,07	-0,05	-0,09	-0,04	-0,19	0,07	0,02	0,03	1,00												
J - AUDITFEES		0,15	-0,03	-0,34	0,06	0,11	-0,06	0,06	0,05	-0,02	1,00											
K - INVENTORIES		0,16	0,19	-0,11	0,12	0,31	-0,04	0,05	0,03	-0,12	0,35	1,00										
L - REVENUE		0,06	-0,02	-0,25	0,08	0,23	-0,28	0,03	0,01	-0,11	0,65	0,58	1,00									
M - PPE		0,09	0,07	-0,27	0,07	0,37	-0,31	0,14	0,10	-0,15	0,52	0,63	0,84	1,00								
N - GOODWILL		0,00	-0,09	-0,06	0,00	-0,06	0,03	0,14	0,10	0,01	0,48	0,31	0,46	0,38	1,00							
O - INTANGIBLES		0,18	0,00	-0,12	0,09	0,06	-0,10	0,10	0,07	-0,03	0,36	0,46	0,52	0,49	0,56	1,00						
P - SIZE		0,03	-0,12	-0,26	0,06	0,00	-0,19	0,08	0,05	-0,05	0,68	0,38	0,80	0,66	0,48	0,42	1,00					
Q - CURRENTRATIO		-0,09	0,25	0,10	-0,04	0,16	0,09	-0,07	-0,03	-0,04	0,04	0,06	-0,13	-0,09	-0,05	-0,07	-0,11	1,00				
R - LEVERAGE		-0,09	-0,11	0,08	0,03	-0,12	0,02	0,11	0,04	0,00	-0,08	-0,12	-0,07	-0,06	-0,06	-0,14	0,02	-0,12	1,00			
S - ROA		-0,11	-0,10	0,04	0,06	-0,15	0,01	-0,23	-0,20	-0,06	-0,22	-0,27	-0,25	-0,30	-0,04	-0,21	-0,33	0,15	0,01	1,00		
T - LOSS		-0,07	0,14	-0,07	0,04	0,27	-0,05	0,28	0,28	-0,06	0,13	0,15	0,18	0,21	-0,07	0,02	0,16	-0,09	-0,01	-0,56	1,00	
U - COMPLEXITY		-0,05	-0,20	-0,11	-0,02	0,03	-0,31	0,04	0,04	0,08	0,48	-0,03	0,55	0,34	0,31	0,15	0,61	-0,13	0,00	-0,09	0,05	1,00

Table 17: Pearson correlations for ALRKAMs

Pearson correlations (ALRKAMs)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
A - #ALRKAMs		1,00																				
B - Index		0,08	1,00																			
C - AUDITFIRM		-0,09	0,07	1,00																		
D - SWITCH		0,11	-0,04	-0,11	1,00																	
E - INDUSTRY		0,11	0,31	0,16	-0,07	1,00																
F - YEAREND		-0,21	-0,06	0,24	0,03	-0,09	1,00															
G - YEAR		0,09	0,00	-0,02	0,16	0,00	0,00	1,00														
H - CRISIS		0,09	0,00	-0,01	0,13	0,00	0,00	0,77	1,00													
I - NONAUDITFEESRATIO		-0,13	-0,05	-0,09	-0,04	-0,19	0,07	0,02	0,03	1,00												
J - AUDITFEES		0,34	-0,03	-0,34	0,06	0,11	-0,06	0,06	0,05	-0,02	1,00											
K - INVENTORIES		0,16	0,19	-0,11	0,12	0,31	-0,04	0,05	0,03	-0,12	0,35	1,00										
L - REVENUE		0,35	-0,02	-0,25	0,08	0,23	-0,28	0,03	0,01	-0,11	0,65	0,58	1,00									
M - PPE		0,25	0,07	-0,27	0,07	0,37	-0,31	0,14	0,10	-0,15	0,52	0,63	0,84	1,00								
N - GOODWILL		0,26	-0,09	-0,06	0,00	-0,06	0,03	0,14	0,10	0,01	0,48	0,31	0,46	0,38	1,00							
O - INTANGIBLES		0,26	0,00	-0,12	0,09	0,06	-0,10	0,10	0,07	-0,03	0,36	0,46	0,52	0,49	0,56	1,00						
P - SIZE		0,32	-0,12	-0,26	0,06	0,00	-0,19	0,08	0,05	-0,05	0,68	0,38	0,80	0,66	0,48	0,42	1,00					
Q - CURRENTRATIO		0,06	0,25	0,10	-0,04	0,16	0,09	-0,07	-0,03	-0,04	0,04	0,06	-0,13	-0,09	-0,05	-0,07	-0,11	1,00				
R - LEVERAGE		-0,11	-0,11	0,08	0,03	-0,12	0,02	0,11	0,04	0,00	-0,08	-0,12	-0,07	-0,06	-0,06	-0,14	0,02	-0,12	1,00			
S - ROA		-0,15	-0,10	0,04	0,06	-0,15	0,01	-0,23	-0,20	-0,06	-0,22	-0,27	-0,25	-0,30	-0,04	-0,21	-0,33	0,15	0,01	1,00		
T - LOSS		0,16	0,14	-0,07	0,04	0,27	-0,05	0,28	0,28	-0,06	0,13	0,15	0,18	0,21	-0,07	0,02	0,16	-0,09	-0,01	-0,56	1,00	
U - COMPLEXITY		0,43	-0,20	-0,11	-0,02	0,03	-0,31	0,04	0,04	0,08	0,48	-0,03	0,55	0,34	0,31	0,15	0,61	-0,13	0,00	-0,09	0,05	1,00

Table 18 presents the variance inflation factor. The variance inflation factor shows that the variables are moderately correlated, however they are not high enough to cause multicollinearity issues. In general, the VIF should not be higher than 10 and the tolerance values should not be below 0.10. If the VIF shows a value between 5 and 10, it will demonstrate a strong correlation. As shown in the table 18, most of the variables have a value between 1 and 5 which signals a moderate correlation. It is however interesting to note, that the correlation between the independent variable REVENUE and the dependent variable KAM shows a value of 7.32, which points out to a strong relationship.

Table 18: VIF and tolerance values

VIF and tolerance values								
Model 1 (KAMs)			Model 2a (ELRKAMs)			Model 2b (ALRKAMs)		
Variable	1/VIF	VIF	Variable	1/VIF	VIF	Variable	1/VIF	VIF
NONAUDITFEESRATIO	0,94	1,07	AUDITFEES	0,49	2,06	NONAUDITFEESRATIO	0,97	1,03
AUDITFEES	0,46	2,17	GOODWILL	0,70	1,43	AUDITFEES	0,57	1,74
INVENTORIES	0,42	2,36	SIZE	0,36	2,78	INVENTORIES	0,57	1,77
INTANGIBLES	0,54	1,87	CURRENTRATIO	0,92	1,09	INTANGIBLES	0,69	1,45
PPE	0,26	3,86	LEVERAGE	0,97	1,03	PPE	0,27	3,75
REVENUE	0,14	7,32	ROA	0,81	1,23	REVENUE	0,23	4,36
SIZE	0,25	3,97	COMPLEXITY	0,58	1,73			
GOODWILL	0,55	1,83	NONAUDITFEESRATIO	0,96	1,04			
CURRENTRATIO	0,88	1,14						
ROA	0,76	1,32						
COMPLEXITY	0,43	2,33						
LEVERAGE	0,94	1,07						
Mean VIF		2,53	Mean VIF		1,55	Mean VIF		2,35

In order to test the hypothesis H4 “*The total number of KAMs disclosed in the audit report is determined by auditor and client characteristics*”, table 19 shows the obtained findings. The R squared for KAM (Model 1) is 33.2%, for ELRKAM (Model 2a) is 27.2% and for ALRKAM (Model 2b) is 34.1%.

The results for big four audit firms such as EY (coefficient: 0.564; $p \leq 0.01$), KPMG (coefficient: 0.173; $p \leq 0.01$), PWC (coefficient: 0.509; $p \leq 0.01$) and Deloitte (coefficient: 0.485; $p \leq 0.01$) in reference to Baker Tilly GmbH & Co. KG are all positive and significant, meaning that all big four audit firms disclose more KAMs than the non-big four audit firms in audit reports. KPMG with the lowest coefficient discloses the lowest number of KAMs compared to other big four audit companies. Also, the variable AUDIT FEES is significant and positive, however shows rather a weak relationship. This shows a slightly different results than those by Sierra-García et al. (2019), where no significance between these two variables was discovered. The variable NON-AUDIT FEES RATIO is also significant but negative, meaning that NAF RATIO is lower when the auditor reports a higher number of KAMs.

Considering the client characteristics, the independent variable LEVERAGE (coefficient: -0.128; $p \leq 0.01$) demonstrates a significant and negative relationship to the number of KAMs. Therefore, less liquid companies reveal more KAMs in their audit reports. The variable LOSS (coefficient: 0.002; $p \leq 0.01$) is not significant and thus signals no relationship between the profitability of the firm and the number of KAMs disclosed. The variable COMPLEXITY (coefficient: 0.003; $p \leq 0.01$) is not significant, meaning that the number of subsidiaries of a company does not influence the number of KAMs reported.

Furthermore, the variables INVENTORIES (coefficient: 0.031; $p \leq 0.01$), INTANGIBLES (coefficient: 0.212; $p \leq 0.01$) and SWITCH (coefficient: 0.243; $p \leq 0.01$) are significant and have a positive association to the number of KAMs.

On the other side, the variables REVENUE (coefficient: -0.051; $p \leq 0.01$), PPE (coefficient: -0.063; $p \leq 0.01$), SIZE (coefficient: -0.077; $p \leq 0.01$) and ROA (coefficient: -2.103; $p \leq 0.01$) show a significant and negative relationship to KAM, meaning that the higher each of these variables is, the less KAMs will be disclosed in the audit report. These results do not match the expected outcomes.

With respect to industrial sectors and the number of KAMs, the sector ENERGY (coefficient: 0.500; $p \leq 0.01$) seems to report the highest number of KAMs. Other sectors such as INFORMATION TECHNOLOGY (coefficient: -0.812; $p \leq 0.01$), INDUSTRIALS (coefficient: -1.216; $p \leq 0.01$), HEALTH CARE (coefficient: -0.950; $p \leq 0.01$) or MATERIALS (coefficient: -0.125; $p \leq 0.01$) in reference to CONSUMER STAPLES have a negative and significant relationship, meaning that these industries disclose fewer KAMS that the consumer staples sector.

Finally, the variable YEAR-END (coefficient: 0.016; $p \leq 0.01$) is not significant and therefore has no association with the number of KAMs in the audit reports. The variable YEARS shows a positive significance and reveals that the highest number of KAMs was released in 2017 and the lowest in 2019.

All in all, the results of the regression analysis support the hypothesis H4 and so the client and auditor characteristics are, to a certain extent, determinants of the number of key audit matters disclosed in audit reports.

To test the hypothesis H5 “*The number of each type of KAM included in the audit report is determined by auditor and client characteristics*”, table 19 presents the findings for ELRKAMs (Model 2a) and ALRKAMs (Model 2b).

Based on the findings in Model 2a, big four audit firms such as EY (coefficient: 0.442; $p \leq 0.01$), KPMG (coefficient: 0.038; $p \leq 0.01$), PWC (coefficient: 0.495; $p \leq 0.01$) and Deloitte (coefficient: 0.144; $p \leq 0.01$) with reference to Baker Tilly GmbH & Co. KG tend to disclose a higher number of ELRKAMs than non-big four audit firms. The variable AUDIT FEES (coefficient: 0.196; $p \leq 0.01$) is positive and significant, meaning that more ELRKAMs disclosed in the audit report result in higher audit fees. Moreover, the variable NAF RATIO (coefficient: 0.197; $p \leq 0.01$) proves a positive and significant relationship to the number of ELRKAMs.

Regarding the client characteristics, the variables INVENTORIES (coefficient: 0.036; $p \leq 0.01$), PPE (coefficient: 0.027; $p \leq 0.01$) and INTANGIBLES (coefficient: 0.105; $p \leq 0.01$) have a significant and positive relationship to the number of ELRKAMs; thus, companies with a higher amount of inventories and intangibles tend to report more ELRKAMs in their audit reports. However, variables REVENUE (coefficient: -0.132; $p \leq 0.01$), SIZE (coefficient: -0.049; $p \leq 0.01$); LEVERAGE (coefficient: -0.039; $p \leq 0.01$); LOSS (coefficient: -0.257) and SWITCH (coefficient:

-0.274; $p \leq 0.01$) show a significant and inverse relationship to the number of ELRKAMs. Interestingly, the variable COMPLEXITY presents no significant relationship to the number of ELRKAMs, meaning that the number of subsidiaries does not impact the number of ELRKAMs disclosed.

The companies operating in industry sectors INFORMATION TECHNOLOGY (coefficient: 0.188; $p \leq 0.01$), HEALTH CARE (coefficient: 0.150; $p \leq 0.01$) and MATERIALS (coefficient: 0.875; $p \leq 0.01$) have a positive relationship to the number of ELRKAMs and tend to report a higher number of entity-level key audit matters than those in CONSUMER STAPLES sector.

Finally, the variable YEAR-END (coefficient: 0.194; $p \leq 0.01$) is positive and significant; thus, companies reporting on 31st of December seem to disclose more ELRKAMs in their audit reports than those reporting on any other date. The variable YEAR is positive and significant in all years; however, tend to decrease over the study period, which points out to a decreasing level of ELRKAMs in audit reports over the years.

To sum up, the results of the regression analysis support the hypothesis H5 and so the client and auditor characteristics are, to a certain extent, determinants of the number of entity-level key audit matters disclosed in audit reports.

Based on the findings in Model 2b, big four audit firms like EY (coefficient: 0.071; $p \leq 0.01$), KPMG (coefficient: 0.096; $p \leq 0.01$), PWC (coefficient: -0.023; $p \leq 0.01$) and Deloitte (coefficient: 0.250; $p \leq 0.01$) all have a significant relationship to the number of ALRKAMs in the audit report. Deloitte tends to disclose the highest number of ALRKAMs, whereas PWC tends to disclose the least ALRKAMs among the big four audit companies. The variable AUDIT FEES (coefficient: 0.089; $p \leq 0.01$) is positive and significant, however shows rather a very weak relationship. Moreover, the variable NAF RATIO (coefficient: -0.532; $p \leq 0.01$) presents an inverse and significant relationship, meaning that a higher number of ALRKAMs leads to a decreased NAF RATIO.

With respect to client characteristics, variables INTANGIBLES (coefficient: 0.078; $p \leq 0.01$), LOSS (coefficient: 0.242; $p \leq 0.01$) and SWITCH (coefficient: 0.442; $p \leq 0.01$) show a positive and significant association to the number of ALRKAMs, meaning that companies with a higher amount of intangibles, who reported a loss or switched an auditor tend to disclose more ALRKAMs in their audit reports. The variable COMPLEXITY (coefficient: 0.003; $p \leq 0.01$) presents no significant relationship and therefore does not affect the number of ALRKAMs.

Considering the various industry sectors, companies operating in the sector INDUSTRIALS (coefficient: -1.261; $p \leq 0.01$) disclose the least ALRKAMs. On the other hand, companies operating in the sector ENERGY report the highest number of ALRKAMs in their audit reports.

Not to mention, the variable YEAR-END (coefficient: -0.231; $p \leq 0.01$) shows an inverse and significant relationship to the variable ALRKAMs, meaning that companies reporting on 31st of December disclose fewer ALRKAMs than those reporting on any other date.

All in all, the results of the regression analysis support the hypothesis H5 and so the client and auditor characteristics are, to a certain extent, determinants of the number of account-level key audit matters disclosed in audit reports.

Table 19: Linear regression, standard errors

Linear regression, standard errors						
	MODEL 1 (#KAM)		MODEL 2a (#ELRKAM)		MODEL 2b (#ALKAM)	
	Regress. Coefficient	Stand. Error	Regress. Coefficient	Stand. Error	Regress. Coefficient	Stand. Error
AUDIT FIRM (REFERENCE: Baker Tilly)						
EY	0,564	0,522	0,442	0,349	0,071	0,443
KPMG	0,173	0,516	0,038	0,345	0,096	0,438
PWC	0,509	0,515	0,495	0,344	-0,023	0,437
Deloitte	0,485	0,526	0,144	0,352	0,250	0,447
BDO	0,077	0,568	-0,019	0,380	0,019	0,482
Warth & Klein Grant Thornton AG	0,500	0,703	0,750	0,470	-0,250	0,597
Rödl & Partner GmbH	-0,250	0,703	0,000	0,470	-0,250	0,597
Ebner Stolz GmbH & Co Kg.	-0,333	0,574	0,000	0,384	-0,333	0,487
CRISIS	0,265	0,218	0,165	0,155	0,044	0,180
NONAUDITFEESRATIO	-0,377	0,238	0,197	0,170	-0,532	0,197
AUDITFEES	0,207	0,103	0,196	0,074	0,089	0,085
INVENTORIES	0,031	0,035	0,036	0,025	0,025	0,029
REVENUE	-0,051	0,119	-0,132	0,085	0,016	0,099
PPE	-0,063	0,069	0,027	0,049	-0,071	0,057
GOODWILL	-0,008	0,037	-0,046	0,026	0,035	0,031
INTANGIBLES	0,212	0,054	0,105	0,039	0,078	0,045
SIZE	-0,077	0,102	-0,049	0,072	-0,094	0,084
CURRENTRATIO	0,005	0,048	-0,067	0,034	0,066	0,039
LEVERAGE	-0,128	0,161	-0,039	0,115	-0,093	0,133
ROA	-2,103	1,103	-1,287	0,787	-0,878	0,912
LOSS	0,002	0,222	-0,257	0,158	0,242	0,184
COMPLEXITY	0,003	0,001	0,000	0,001	0,003	0,001
SWITCH	0,243	0,295	-0,274	0,211	0,442	0,245
INDUSTRY (REFERENCE: CONSUMER STAPLES)						
Telecommunication services	0,000	0,533	0,083	0,383	-0,333	0,442
Real Estate	-1,500	0,516	-0,375	0,371	-1,125	0,428
Information technology	-0,812	0,516	0,188	0,371	-1,000	0,428
Industrials	-1,216	0,472	0,000	0,339	-1,261	0,392
Consumer discretionary	-0,729	0,481	-0,167	0,345	-0,583	0,399
Health care	-0,950	0,506	0,150	0,364	-1,100	0,420
Materials	-0,125	0,566	0,875	0,406	-1,125	0,469
Energy	0,500	0,653	0,000	0,469	0,250	0,542
YEAREND	0,016	0,197	0,194	0,140	-0,231	0,163
YEAR (REFERENCE: 2020)						
2017	0,352	0,193	0,407	0,129	-0,185	0,162
2018	0,111	0,193	0,296	0,129	-0,222	0,162
2019	-0,074	0,193	0,037	0,129	-0,130	0,162
R-SQUARED	0,332		0,272		0,341	
Observations	216		216		216	

9. Conclusion

The current economic developments (Covid-19 pandemic) have caused companies experiencing issues, mostly of a financial nature. Enterprises around the world reported liquidity constraints, many of them ending the financial year with a loss. All these events have a significant impact on the going concern premise as well as firm`s biggest risks. This consequently impacts the work of the auditor and the nature of the published audit report.

Previously, a considerable amount of research was done with respect to the impact of economic crisis on audit reports as well as on the nature of key audit matters disclosed in these reports. However, the influence of the Covid-19 crisis is a current topic which has not been researched yet. For this reason, the aim of this thesis is to analyze whether and if so, in what extent the current Covid-19 crisis influences the audit report of the SDAX companies in the period 2017 – 2020.

The first part examines whether the pandemic has an influence on the type of an audit opinion, especially with a focus on going concern modifications, and uses descriptive statistics to analyze the obtained data. The results reveal that the crisis does not affect the audit opinion of the sample companies to a wide extent, meaning that there is an evidence of only one case of an unqualified audit opinion with an emphasis of matter paragraph for going concern in 2019 and 2020. Further analysis shows that big four audit firms tend to issue more unqualified audit opinions with an emphasis of matter paragraph for going concern than the non-big four audit companies, which might signal a higher quality audit. Also, companies operating in the industry sector “consumer discretionary” have a higher probability to report emphasis of matter paragraphs for going concern in the audit opinion than companies in any other sector. However, it is important to note that the findings provide rather a weak evidence.

The second part uses descriptive statistics and a linear regression model to analyze the relationship between Covid-19 crisis and the nature of key audit matters disclosed in the audit report. The results show that the client and auditor characteristics prove to have a significant association not only with the number of key audit matters, but also with the type of these matters.

Considering the auditor characteristics, KPMG tends to disclose fewer KAMs than any other big four audit firm. On the other hand, PWC discloses the highest number of ELRKAMs and Deloitte reports the highest number of ALRKAMs. With respect to audit fees, the number of ELRKAMs

disclosed seem to have the most significant association, meaning that more ELRKAMs lead to higher audit fees.

Regarding the client characteristics, results show that companies with a higher number of intangibles and inventories tend to disclose more ELRKAMs. On contrary, companies that reported a loss or have more revenue in the financial year disclose more ALRKAMs in their audit reports.

Furthermore, industry sectors are also determinants of the number and type of KAMs. Another interesting determinant is also the reporting year, whereas ELRKAMs show a decreasing trend and ALKRRKAMs on the other side are rising in number over the study period.

To sum it up, this thesis contributes to the current research concerning the impact of a crisis on the audit report and brings new insights about how the new Covid-19 crisis influenced the audit opinion and other disclosures in the audit report. However, since this thesis considers only small- to medium-sized listed enterprises, a further research is needed to make the results accountable also for other types of businesses. For example, an analysis about small unlisted businesses, that seemed to experience serious financial problems, might provide more interesting results, especially with respect to going concern premise.

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Appendices

Appendix A: Abstract

There is an evidence that a lot of research has been conducted in terms of crisis and its impact on the audit opinion and audit report. However, I identified a gap in the research of how the current Covid-19 crisis influences the audit report. The aim of this thesis is to examine the impact of the Covid-19 crisis on audit reports of companies listed in the SDAX index over the period 2017 – 2020. The first part of the research analyzes the audit opinion and the key audit matters using descriptive statistics. The second part analyzes the relationship between key audit matters and auditor and client characteristics and uses a linear regression model. The results showed that the Covid-19 crisis impacted the audit opinion rather to a smeller degree. Moreover, the findings also showed that client and auditor characteristics are determinants of the number of key audit matters as well as the type of these matters disclosed in the audit reports.

Appendix B: Abstrakt

Der Einfluss der Finanzkrise auf den Bestätigungsvermerk wurde bereits in zahlreichen Forschungsstudien untersucht. Welchen Einfluss aber die jetzige Corona-Krise auf den Bestätigungsvermerk hat, stellt allerdings eine Forschungslücke dar. Das Ziel in der vorliegenden Arbeit ist es zu analysieren, welchen Einfluss die Corona-Krise auf den Bestätigungsvermerk der im SDAX - Index gelisteten Unternehmen im Zeitraum 2017 – 2020 hat. Um dies zu beantworten, wurde eine quantitative Untersuchung der Bestätigungsvermerke durchgeführt. Im ersten Teil dieser Studie wurden mittels deskriptiver Statistik die Prüfungsurteile sowie die besonders wichtige Prüfungssachverhalte analysiert. Im zweiten Teil wurde eine Regressionsanalyse durchgeführt und somit die Beziehung zwischen den besonders wichtigen Prüfungssachverhalten und den Klientel- und Wirtschaftsprüfercharakteristiken analysiert. Die Ergebnisse zeigen, dass die Corona-Krise die Prüfungsurteile nur in geringerem Maße beeinflusst hat. Außerdem zeigen weitere Resultate, dass die Klientel- und Wirtschaftsprüfercharakteristiken die Determinanten der Anzahl sowie der Art der besonders wichtigen Prüfungssachverhalte sind.