



UNIVERSIDADE CATÓLICA PORTUGUESA

Audit materiality reported level: the case of the UK

Por

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Católica Porto Business School
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“One of the greatest discoveries a person makes, one of their great surprises, is to find they can do what they were afraid they couldn’t do.” - Henry Ford

Resumo

Este estudo analisa a forma como os auditores aplicam a materialidade, tirando partido das recentes alterações ao normativo ISA700 (UK) que exige a divulgação do nível de materialidade no relatório de auditoria para todas as empresas cotadas no London Stock Exchange (LSE).

A literatura mostra a relevância do conceito de materialidade, mas não analisa a forma como esta é utilizada pelos auditores. Esta lacuna é o resultado da falta de informação disponível para análise e regulações não universais, o que nos permite beneficiar da obrigatoriedade de divulgação para as empresas cotadas no LSE.

A nossa análise é exploratória e tem por objetivo encontrar evidência de efeitos e relações antecipadas pela literatura e normativo de auditoria. Analisámos o período entre 2016 e 2021 e os resultados apresentam evidência sobre alguns determinantes que afetam o nível de materialidade, nomeadamente a nossa análise aborda a relação inversa entre o risco de auditoria e a materialidade, ou seja, quanto maior for o risco de auditoria, menor deverá ser a materialidade. Apresentamos detalhe de que os auditores se adaptaram ao aumento do risco de auditoria devido à pandemia em 2019 e sobre o efeito dos honorários de auditoria na materialidade. Finalmente, é feita uma análise do impacto na materialidade do risco de auditoria numa transição do auditor.

As disparidades nos resultados motivam uma intervenção de reguladores para determinar a forma como os auditores devem determinar a materialidade.

Palavras-chave: Materialidade, Risco de auditoria, ISA 700, FTSE350

Abstract

This study considers how auditors apply materiality, taking advantage of recent changes to ISA700 (UK) which requires disclosure of the level of materiality in the audit report for all companies listed on the London Stock Exchange (LSE).

The literature shows the relevance of the concept of materiality, but does not address how it is used by auditors. This gap is the result of the lack of information available for analysis and non-universal regulations, which allows us to benefit from the mandatory disclosure requirement for LSE listed companies.

Our analysis is exploratory and aims to find evidence of the effects and relationships anticipated by the audit literature and regulations. We analysed the period between 2016 and 2021 and the results present evidence on some determinants that affect the level of materiality, in particular our analysis addresses the inverse relationship between audit risk and materiality, i.e., the higher the audit risk, the lower the materiality should be. We present detail that auditors have adapted to the increased audit risk due to the pandemic in 2019 and on the effect of audit fees on materiality. Finally, an analysis of the impact on audit risk materiality of an auditor transition is provided.

The disparities in results motivate an intervention by regulators to determine how auditors should determine materiality.

Keywords: Materiality, Audit risk, ISA 700, FTSE350.

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Chapter 1

Introduction

1.1 Overview

The concept and all the underlying implications of materiality is a critical issue in the field of auditing, as it plays a crucial role in determining the reliability of financial statements. Materiality refers to the threshold at which financial information becomes significant enough to influence the decision-making of users of financial statements. Hence, it is essential to analyse how auditors use materiality to ensure the accuracy and reliability of financial information.

Despite the significance of materiality, there is a gap in the literature regarding the analysis of how auditors use materiality. Most countries do not require mandatory disclosure of the level of materiality used by auditors, which limits the availability of data for research purposes. The existing studies that focus on how auditors use materiality are limited to small sample sizes, and there is no empirical evidence on how materiality is actually used.

The UK is one of the few countries, to our knowledge, that requires the auditor to disclose information on auditing materiality in the audit report. For this reason, we focus our study on UK firms, more specifically, on the constituents of the FTSE 350 index for the period from 2016 to 2021.

The paper is organized as follows: a more technical explanation of what the concept of materiality entails and the regulations surrounding this topic are provided in chapter 1. Chapter 2 presents the literature review, focusing on how auditors use materiality, highlighting the gaps in the current research and the need for this study. In chapter 3 the research questions are presented. Chapter 4 describes our sample construction and data collection methods giving

transparency. Chapter 5 describes our analysis and chapter 6 discusses the results. Finally, chapter 7 presents the main conclusions and limitations of this study and puts forward recommendations for further research.

The importance of this work lies in its contribution to the understanding of how auditors use materiality, which can inform the development of auditing standards and practices. The analysis of a larger sample size can provide a more comprehensive understanding of how auditors use materiality, which can be useful for policymakers, regulators, auditors, and investors. Additionally, the findings of this study can assist in identifying areas that require further research.

1.2 Audit materiality and its relationship with audit risk and audit quality

Audit materiality is referred to the significant threshold used by an auditor when assessing whether a company's financial statements are presented fairly. It is the level at which an error or misstatement in the financial statement would be considered material, or significant enough to affect the auditor's overall opinion on the financial statements. It is used to guide the auditor's choice of items to teste and evaluate the results of their assessment. According to the Financial Reporting Council (FRC), the primary regulator in UK, *"(...) information is considered to be material if its misstatement or omission individually or in aggregate could influence the economic decisions of users on the basis of the financial information provided. Setting materiality is recognised by standard setters and auditors as a key part of the audit from which the planning, scoping and reporting flows."*

In order to plan an audit, the auditor must consider what could cause the financial statements to be significantly incorrect. This involves using their understanding of the entity and its environment to assess the risks of material

misstatement and make judgments about how to respond to those risks throughout the audit. The auditor must also establish a materiality threshold, which helps them decide which items to examine and whether to use sampling procedures. By selecting appropriate audit procedures, the auditor can reduce audit risk to an acceptable level.

The auditor must also evaluate the inverse link between materiality and audit risk. The danger of a substantial misstatement increases if the auditor decides that a lower materiality requirement is needed, which in turn raises audit risk. The auditor must either conduct additional tests to lower the risk of material misstatement or adapt the audit methods to improve their efficacy in order to reduce risk. The auditor can create an audit plan that offers a reasonable level of assurance regarding the correctness and completeness of the financial statements by carefully weighing materiality and audit risk.

Auditors consider both quantitative and qualitative factors when determining materiality. Quantitative factors include the size of the entity and the precise amount of the misstatement. Qualitative factors include the nature of the item, how it relates to other items in the financial statements, the context, and the intended users of the financial statements. Materiality is often calculated as a percentage of a balance sheet or income statement account. For example, if a company's audit materiality threshold is set at 1% of total assets, any errors or misstatements above 1% of total assets require disclosure in audit report.

1.2.1 Mistake and misstatement

An audit error is a mistake made by an auditor while conducting an audit, such as an incorrect calculation or interpretation of a fact. Misstatements occur when facts or transactions in financial statements are inaccurately represented, and they can result from fraud or errors made by management or auditors.

Material misstatements are those that could impact financial decision-making based on the financial statements.

Audit risk is the possibility that an auditor will present an incorrect assessment of financial statements due to reliance on others or variables that affect the audit process. Audit quality refers to the effectiveness and reliability of the audit process, which depends on variables such as auditor competence, independence, and auditing techniques. Due professional care and scepticism are required to guarantee reasonable assurance that financial statements are free of substantial misrepresentation. Materiality is an essential concept that helps auditors focus their efforts on relevant areas to discover and correct significant misstatements, enhancing the overall quality of the audit and reducing the risk of expressing an incorrect opinion on financial statements.

1.3 Regulation on materiality

Regulation plays a critical role in ensuring that businesses operate ethically and transparently, particularly in industries where the stakes are high. In the field of accounting and auditing, regulations help establish standards and guidelines for financial reporting, auditing procedures, and ethical conduct. Compliance with these regulations is not only a legal requirement but also essential to maintaining the trust and confidence of stakeholders.

1.3.1 ISA 320

The International Standard on Auditing (ISA) 320 "Materiality in Planning and Performing an Audit" provides guidance on materiality and the auditor's consideration of misstatements in financial statements. It outlines the procedures to be followed by auditors when assessing the materiality of misstatements and

the implications of material misstatements. The standard emphasizes the importance of professional judgment in determining materiality and sets out the auditor's responsibilities in identifying, evaluating, and documenting misstatements. It also provides guidance on the auditor's communication of misstatements to management and those charged with governance and the auditor's reporting obligations in the event of uncorrected material misstatements.

Specifically, the standard outlines the following:

1. The auditor's responsibility is to assess materiality in the planning phase of the audit.
2. The factors that the auditor should consider when determining materiality.
3. How to apply materiality in the context of planning and performing audit procedures.
4. The need for the auditor to reassess materiality throughout the audit process as new information comes to light.
5. The importance of considering both quantitative and qualitative factors when assessing materiality.

Overall, ISA 320 is an important standard that helps auditors to ensure that their audits are performed with sufficient rigour and care, to provide reasonable assurance that the financial statements are free from material misstatement.

1.3.2 ISA 700

ISA 700 is an auditing standard that provides guidance on the auditor's report on financial statements. It outlines the requirements for the content of the auditor's report, including the introductory, scope, and opinion paragraphs. The standard emphasizes the importance of the auditor's independence and objectivity and sets out the responsibilities of the auditor with regard to

identifying and assessing the risks of material misstatement, obtaining sufficient and appropriate audit evidence, and evaluating the consistency and presentation of the financial statements. The standard also provides guidance on the form and content of the auditor's report, including the use of emphasis-of-matter paragraphs and other explanatory content when necessary. The standard aims to ensure that the auditor's report is clear, concise, and informative, and provides a fair and accurate representation of the auditor's findings and opinion on the financial statements.

Materiality is a significant component in auditing work and a subject of special interest to investors due to its possible impact on the scope of an audit and the evaluation of audit results.

1.4 Mandatory disclose information: an example

The FRC has updated the International Standards on Auditing (UK and Ireland), ISA 700, requiring auditors to disclose how they used the notion of materiality when executing the audit and how this impacts the scope of their audits. This was done in response to growing investor requests for additional details about the auditing procedure used by the firm. Financial statement audits for reporting periods beginning on or after October 1, 2012, must be conducted in accordance with the new standard. For the first time, risk assessment and materiality planning from the audit process will be integrated into the audit report with the new ISA 700. As a result, the informativeness of the new audit report's materiality thresholds can now be evaluated for the first time.

Auditors must disclose how they used materiality criteria during the audit process as per ISA (UK and Ireland) 700. This disclosure should be tailored based on the audit's complexity and unusual conditions. The auditors must describe

both the threshold or percentage used for overall materiality assessment and the benchmark used for determining materiality for the financial statements.

To comply with ISA 700, additional details regarding materiality, such as materiality levels for specific transactions, account balances, or disclosures less significant than overall materiality, performance materiality, significant changes to materiality threshold, the threshold used for reporting unadjusted differences, and qualitative considerations, are suggested by the FRC but not required. These additional disclosures are known as "voluntary disclosures" and are at the auditor's discretion to include or exclude. The "rationale" for the selection of the materiality benchmark is also frequently included in audit reports, and this information is referred to as "voluntary disclosures by auditors" as it is not mandated by the standard.

1.4.1 InterContinental: Auditors' Independent Report

A random auditor report was selected from the sample to illustrate the various disclosures made by auditors. The report showed that the auditors voluntarily included the rationale for their choice of materiality benchmark. This information is not required by the standard. It can be considered an example of "voluntary disclosures by auditors." In addition to the rationale for the benchmark, the report may also include other voluntary disclosures such as performance materiality¹, revisions made to the materiality threshold during the audit, the threshold used for reporting unadjusted differences to the audit committee, and qualitative considerations in the auditor's evaluation of materiality. These disclosures provide a more comprehensive understanding of the auditor's approach to materiality and their assessment of the financial statements.

¹ "Performance materiality is an amount less than materiality for the financial statements as a whole (i.e., planning materiality) to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality for the financial statements as a whole." <https://www.thomsonreuters.com/>

The sentences that follow were pieced together from the audit report for InterContinental PLC issued by EY.

Mandatory disclosed information:

“Overall Group materiality of \$26 million was applied which represents 5% of a normalised profit before tax, adjusted for pre-tax exceptional items and the System Fund.”

Benchmark (adjusted profit before tax (PBT)) and threshold (5%) are required to be clearly disclosed according to ISA700.

Voluntary disclosed (recommended by Standard):

“We believe the adjusted profit measure, which excludes exceptional items and the System Fund, remains the most relevant performance measure to the stakeholders of the Group. The normalised profit was calculated based on average reported results for the financial years ended 31 December 2018, 2019 and 2020. (...) The application of (performance) materiality at the individual account or balance level. It is set at an amount to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality. On the basis of our risk assessments, together with our assessment of the Group’s overall control environment, our judgement was that performance materiality was 75% (2019: 75%) of our planning materiality, namely \$19 million (2019: \$27 million). We have set performance materiality at this percentage based on various considerations including the past history of a low number of misstatements identified during our previous audits and the effectiveness of management’s control environment, to ensure the total uncorrected and undetected audit differences in all accounts did not exceed our materiality. (...) We agreed with the Audit Committee that we would report to them all uncorrected audit differences in excess of \$1.3 million (2019: \$1.8 million), which is set at 5% of planning materiality, as well as differences below that threshold that, in our

view, warranted reporting on qualitative grounds.” (InterContinental Hotels Group PLC, 2020 EY Auditor’s Report).

The remaining information is provided for consideration but is not required. Users can better comprehend the rigour of the audit's scope by using this information. Voluntary disclose information can be listed: (a) rationale used to define materiality, (b) performance materiality, (c) the criteria for reporting unadjusted differences to the audit committee, (d) the most important qualitative factors affecting the auditor's development of materiality and any changes made to the first specified materiality (not included in this example).

Chapter 2

Literature Review on Materiality

Establishing a proper basis during the planning stage is crucial for the audit process. Rejection of materiality and risk assessment during the evidence-gathering stage would be detrimental to the audit (Azzopardi & Baldacchino, 2009). Additionally, the financial statement preparation may be influenced by the audit committee, which could affect the auditor's process (Agoglia et al., 2011). If the initial planning, which includes determining audit materiality and risk assessment, is rejected during the evidence-gathering stage, the audit process would need to be revised (Cullinan, 2004).

There are several definitions for materiality, both from researchers and regulators (Chong, 1992). Initially, materiality has been described as the cornerstone of accountancy (Frishkoff, 1970) or even the Achilles' heel of the accounting profession (O'Glove & Olstein, 1977). Nevertheless, it has been viewed as a concept that is psychological (Moonitz, 1961), important and unknown (Reininga, 1968), a mystery (Rose et al., 1970), elusive (Pattilo, 1975) and illusive (Barnes, 1976).

Chong (1992) states that the variances in defining materiality indicate a lack of common consensus on the impact of materiality within the accounting profession. Additionally, materiality can be perceived as a useful concept for distinguishing important from unimportant items (Chetkovich, 1955). Houghton, Jubb and Kend (2011) describe materiality as the central focus of "sampling," "tolerable error," and "reasonable assurance" concepts.

Materiality is being used by auditors in the planning of an audit, but also for evaluating the evidence after conducting the audit (Chong, 1992). The auditors must make initial determinations regarding the materiality threshold during the

planning phase, as there exists an inverse correlation between the level of materiality deemed by the auditor in the financial statements and the extent of audit procedures required to provide assurance on the fairness of the financial statements. On the other side, to evaluate the evidence, auditors need to decide how adequate the evidence is and the implications on the truth and fairness of the financial statements. Furthermore, expressing an opinion on a set of financial statements indicates that the concept of materiality has been taken in consideration (Chong, 1992).

2.1 A journey through literature

This chapter summarises the key categories in the literature review of audit materiality, namely the review studies, the archival studies, the survey-based studies and the experimental studies. This journey through literature shows that notwithstanding the abundant methodologies used in audit materiality, the knowledge in the practice of how auditors use this is very restricted. Therefore, this investigation aims to emphasise the knowledge that the scientific community already have and further, contribute to the existing gap in the literature.

Holstrum and Messier's (1982) review study was one of the first and most significant contributions to the audit materiality field. The authors organized existing research pre-1982 into four areas: i) the nature of the item, ii) the structural form of the decision model, iii) the relative importance of factors used to determine materiality, and iv) the materiality thresholds. Their findings suggest that auditors' impression of management is a qualitative factor that is relevant to materiality judgments. They also note that auditors from public accounting firms are less sensitive to qualitative factors than auditors from firms that do not have specific quantitative guidelines. Additionally, the authors

conclude that previous studies do not provide any significant contribution to the scientific community.

Chong (1992) conducted an analysis of the materiality definitions used by prior researchers and standards. According to Chong's findings, most scholars view materiality as a subjective concept rather than a strict rule or guideline. Chong also examined the issue of materiality faced by auditors and the potential for fraudulent behaviour in following auditing standards. Chong (1992) recommended that an item could be deemed immaterial if it is less than 10% of net profits and material if it exceeds 15%. However, these suggestions are not universally applicable as the significance of a misstatement to a company depends on various factors.

Chewing and Higgs (2002) discussed the development of the materiality concept through guidance provided by standards and literature. Their research indicates that materiality standards offer only minimal direction, and the literature leads to only a few general conclusions. For instance, revenue, assets, income, and equity are common materiality thresholds, and benchmarks based on assets and revenue remain relatively stable over time.

A notable contribution to the literature on materiality is the detailed literature review conducted by Messier et al. (2005), covering the period from 1982. One of the significant findings from their study is that most audit firms use net income to establish overall materiality, while others rely on revenue or assets. The study also highlights that the immateriality of a misstatement is a crucial factor in waiving potential misstatements. Another significant observation made by the authors is the disparity in defining performance materiality across audit firms, where some firms use mechanical methods for allocation while others do not allocate. Messier et al. (2005) emphasize that this difference can have a significant impact on the scope of work during audits with similar features, thus affecting the effectiveness and efficiency of the audit.

2.2 Studies on practioners

Steinbart (1987) used an archival study to develop a rule-based expert system aimed at assisting with materiality decisions. The study involved analysing the manuals of ten audit firms and working extensively with auditors. Steinbart discovered that determining planning materiality judgments involved two distinct sub-decisions. The first was selecting an appropriate base (quantitative factor) to use for calculating materiality, while the second was choosing a percentage rate to multiply the base (threshold). The selection of the percentage rate was subjective, as it depended heavily on factors such as information about the client's financial statements' intended use and the nature of the audit engagement.

Friedberg et al. (1989) examined audit manuals from the six Big 8 U.S.² public accounting firms. These authors determine and compare the guidance provided by the firms for establishing materiality. Consistent with previous research, the relationship of a misstatement to net income and the effect of a misstatement on earnings trends were regularly considered by the companies as factors that should be taken into consideration in making materiality judgments.

A similar analysis was carried out using the materiality and audit-risk recommendations from the Big 6 public accounting firms nearly a decade later by Martinov and Roebuck (1998). Interviews with a senior representative from each of the participating firms also served to support this analysis. The conclusions of this study are consistent with those of Friedberg et al. (1989) and Steinbart. (1987). The methods used by the different firms to assess the materiality of overall planning varied greatly. Although there was a significant

² Before 1987, the top accountancy firms were actually referred to as the Big 8. They were Deloitte Haskins & Sells, Arthur Andersen, Touche Ross, Price Waterhouse (PWC), Coopers & Lybrand, Peat Marwick Mitchell, Arthur Young & Co. and Ernst & Whinney.

amount of judgment involved for five of the firms in determining planning materiality, recommendations were made regarding the appropriate basis and percentage range. Additionally, five of the companies made a distinction between planning materiality and reporting materiality that was either implicit or explicit.

Keune and Johnstone (2012) studied the relationship between manager and auditor incentives, audit committee characteristics, and materiality judgments regarding detected misstatements. Their research reveals that audit fees influence the likelihood of auditors permitting managers to waive material misstatements. Additionally, audit committees with more significant finance and accounting expertise are less to allow managers to waive material misstatements compared to committees with less expertise.

Pecchiari et al. (2013) conducted a study examining the magnitude and variability of four commonly used quantitative materiality measures, namely profit, assets, equity, and revenue, within and across industries in terms of their size, relative size, and stability over a ten-year period. This cross-industry study covers twenty-four industries from 1998 to 2007. The study findings reveal that the four materiality measures vary with respect to the size and stability of the industry over time, both across industries and, to a lesser extent, within industries. Furthermore, the study indicates that assets are the primary benchmark used in industrial, consumer services, utilities, communications, and banks, while the retail sector uses revenue.

Eilifsen and Messier (2015) studied the materiality guidance for eight of the largest U.S. public accounting firms. This work is a reflective paper on materiality and is often acknowledged as the first paper that provides information about how auditors are expected to apply the concept of materiality by the standards. This investigation aims to understand how materiality guidance is integrated into a firm's methodology and is important for accounting and auditing

researchers as well as for practitioners, regulators, and educators. Their results show a high level of consistency through the firms in terms of the quantitative benchmarks (e.g., income before taxes, total assets or revenues, and total equity) used to determine overall materiality, the related percentages applied to those benchmarks, the percentages applied to overall materiality for defining tolerable misstatement, and what constitutes a clearly trivial misstatement. This demonstrate that firms use multiple levels of materiality benchmarks, and they integrate both quantitative and qualitative features when evaluating misstatements. Furthermore, another stunning result is the inconsistency among auditors regarding the possibility of undetected misstatements when evaluating detected misstatements.

An experimental study worth noting is Fisher's (1990) investigation. The author used an experimental market approach to examine the impact of disclosing materiality levels on investors in terms of security prices, trading volume, and trading profit. The participants in the study were graduate and undergraduate students who acted as proxies for investors. The study utilized a repeated single-period, two-asset (cash and shares), double-auction market, in which the information about the magnitude of materiality was manipulated (i.e., no disclosure versus private disclosure versus public disclosure). Fisher's findings suggest that disclosing materiality levels resulted in greater market efficiency, and that public disclosure of materiality was more effective than private disclosure.

Tuttle et al. (2002) conducted a study using an experimental market approach to investigate the appropriateness of materiality thresholds commonly used by auditors, from a user perspective. The study involved twelve market sessions, each with six traders participating in twelve independent three-minute trading periods. Additionally, seventy-two undergraduate honours business students representing semi-sophisticated investors were given financial information that

contained either correctly stated information, immaterial misstatements or material misstatements. The researchers manipulated materiality at two levels: conservative materiality and liberal materiality. The study found that undisclosed misstatements within the conventional materiality threshold, which is consistent with current audit practice, did not affect market prices, while large misstatements did. This study is the first to provide direct evidence that undisclosed misstatements within the conventional materiality threshold are unlikely to impact users' (traders) perceptions of a company's financial position.

Nelson et al. (2005) studied whether two quantitative materiality approaches (cumulative or current period) used in practice affected auditors' decisions to book adjustments. The cumulative approach compares the total amount of misstatement at the end of the reporting period to net income, while the current period approach compares the misstatement added in the current period to net income. The approach that yields a higher quantitative materiality depends on the relationship between total misstatement and current-period misstatement. Two hundred thirty-four partners and managers replied to eight cases that manipulated qualitative and quantitative misstatement features that prior research indicated may affect materiality judgments and adjustment decisions. These authors state that, through several factors (e.g., misstatement size, the subjectivity of the misstatement, precision, and income effect), auditors are more likely to request the client to book the misstatement below the materiality approach that makes the misstatement appear more material. In addition, they recommend that standard setters mandate auditors to adjust any misstatement that is material under either perspective.

Bookey and Quick (2016) manage an experiment to examine the bank directors' perception of expanded auditors' reports. The aim of this study is to investigate the impact of expanded audit reports that contain information about assurance level, materiality level, and key audit matters on the bank board of

directors' perceptions. Specifically, the study examines how these reports influence the board's views on the financial statement's reliability, audit quality, and the audit report, as well as their decision-making process for granting credit. The results suggest that including the assurance level in the report can significantly improve the audit quality, as materiality plays a critical role in shaping the perception of financial accounts.

Hegazy and Salama (2022) show the effect of qualitative materiality factors on auditors' assessment of materiality and the determination of the type of the auditors' reports. A questionnaire and experimental case studies were used to investigate whether personal characteristics of auditors can impact their reliance on qualitative factors when evaluating the materiality of identified misstatements. The findings suggest that qualitative factors have a strong influence on auditors' materiality judgments. Notably, the nature of the misstatement was the least significant qualitative factor in assessing materiality. The study also revealed that the establishment of explicit or standardized qualitative materiality guidelines would lead to greater consistency among auditors' judgments. Additionally, the study found no significant variations in the degree to which auditors trusted qualitative factors in their materiality judgments based on their personal characteristics.

In a survey-based study, Cox et al. (2013) examined how auditors (accounting firms), preparers (industry), and users (banks) perceive the disclosure of a materiality list. The authors define a materiality list as a subjective compilation of misstatements, omissions, and rounding calculations that would not be considered material on an individual basis by auditors. The study found inconsistencies in materiality thresholds between the group of users and the group of auditors and preparers. Users prefer maximum disclosure of information, while auditors and preparers tend to be more defensive in implementing mandatory disclosures.

The study by Iselin and Iskandar (2000) provides valuable insight from a multi-method perspective. The authors argue that materiality thresholds are the key factor in distinguishing between material and immaterial information. Their study aims to investigate auditor's recognition and disclosure thresholds in the context of industry, which is divided into the industry of the firm and the auditor's industry specialization (experience). One notable finding is that recognition thresholds are significantly lower than disclosure thresholds. The study also indicates that the mean threshold for recognition is 5.7% and for disclosure is 8.7%, which falls within the 5% to 10% guideline provided by Australian accounting standards. Additionally, the study reveals that thresholds appear to be influenced by the industry of the company and the auditor's industry specialization, and vary with industry market risk. Furthermore, the study suggests that auditors tend to use the thresholds from the industry in which they specialize, which has significant implications for auditors in practice.

One more recent study important for audit materiality is from Eilifsen et al. (2021). This study focuses on two disclosures intended to aid investors in assessing the reliability of subjective fair value estimates: the quantitative sensitivity analysis (QSA) and the auditor's quantitative materiality threshold. The findings indicate that investors perceive a reported estimate to be more trustworthy and are more inclined to invest when the QSA disclosure shows low sensitivity (i.e., greater precision) as opposed to high sensitivity (i.e., greater imprecision), but only if the auditor's materiality threshold is also disclosed. In contrast, when materiality is not disclosed, investors are unable to discern discrepancies in reliability between the two levels of sensitivity.

Chapter 3

Research questions

To illustrate how the balance between risk and materiality is managed by auditors, three separate analyses were conducted. As previously noted, the relationship between risk and materiality is both direct and inverse, and through these analyses, insights into how this delicate balance is navigated by auditors are provided.

3.1 RQ1: Is the risk of impacts of covid-19 reflected on materiality?

An analysis was conducted on the isolated event of covid-19 in the first instance. The pandemic, which originated in China in 2019, rapidly spread to Europe, with the first case of covid-19 being reported in the UK on January 20, 2020. As a result, a two-month lockdown of non-essential activities was imposed on March 23, 2020 which ended in May. In November of the same year the British government was compelled to shut down public establishments in an attempt to control the spread of the virus, for 25 days.

The pandemic had an impact on the global economy comparable to that of a war. The UK's GDP growth stood at -11% in 2020. The market sentiment was also evident: the FTSE350 retracted -12.99% (GBP) by 2020, which was the largest drop since 2008.

Considering the environment of uncertainties and high risk, the audit approach needed to be tailored accordingly. An analysis was conducted at the materiality level, comparing 2019 (when few people anticipated any impact from the pandemic) to 2020.

The auditors are expected to intentionally decrease the level of materiality. The analysis was carried out by sector, separating the most affected from the least affected industries. A distinction was also made between the materialities intentionally reduced by the auditors and those resulting from a lower level of activity. This differentiation is relevant when looking at benchmarks linked to the level of activity, such as profit before taxes.

3.2 RQ2: Does materiality level impact audit fees?

The second research question presents an analysis of the relationship between audit fees and materiality, which is important in understanding the demands and regulations of the auditing profession. While technological advancements have made the work of auditors more efficient, it has not reduced the critical or judgmental components of their work, which still requires significant time and effort. Therefore, a lower materiality level requires a more thorough audit, resulting in more working hours and a higher audit fee.

To test the relationship between audit fees and materiality, a linear regression was performed, which revealed a potential inverse relationship between the two variables.

Furthermore, the conflicting interests of the auditor and the audited company can affect the result of the analysis. The auditor aims to maximize their profit margin by charging the maximum fee with minimum working hours, while the audited company seeks to minimize fees by demanding a lower materiality level to provide reliable information to shareholders.

Overall, the analysis gives valuable insights and highlights the importance of considering external factors and potential conflicts of interest in analysing the relationship between audit fees and materiality levels.

3.3 RQ3: Does the change of auditor impact materiality?

This final analysis explores whether a change in audit firm affects materiality.

Shareholders should view a change of auditor positively because it ensures the impartiality of the audit work and eliminates possible "biases" that may result from repetitive work. However, the change carries certain audit risks, including the need for the new auditor to adapt to the company's internal controls and processes.

In light of these challenges and considering the inverse relationship between materiality and audit risk, the level of materiality should be reduced by the auditor compared to the previous auditor.

Typically, when there is a change of auditor, the two audit firms meet to exchange the portfolio and discuss issues such as previously identified internal control failures and past adjustments. Although this meeting can reduce audit risk, it never reduces it to the same level as before the change.

This study analyses all companies that changed auditors between 2016 and 2021 at the materiality level, comparing their performance before and after the change.

Chapter 4

Data and Methodology

4.1 Sample Selection

The sample of this study consists of UK FTSE 350 index over the period of 2016 to 2021, an index that includes the 350 largest firms listed on the London Stock Exchange (LSE). The rationale for selecting the sample mentioned is supported by two arguments. First, the geographic choice is due to the fact that English companies are required to disclose the materiality level in their reports from October 1st 2012 (ISA 700), as explained in the first chapter. Additionally, firms listed in the FTSE350 are under more stringent regulatory oversight and guided by established criteria.

The sample period covers six years which is considered sufficient to infer conclusions from the analysis performed. Also, it covers the pandemic covid-19 period, where specific analysis was performed.

4.2 Data Collection

We have used Bloomberg to retrieve the list of FTSE350 constituents and companies' financial information, namely: total assets, total liabilities, total equity, sector, price earnings, earnings per share for twelve months before reporting date, total revenues, audit fees and stock price volatility for twelve months before reporting date.

The data on materiality was retrieved from the actual annual report of each firm using the tool developed and presented in El-Haj et al. (2019)³. We applied a python script to try to locate and extract the area in the audit report in which the materiality information is disclosed. This script uses keywords such as materiality, performance, auditor, and senior auditor, to extract all potential paragraphs to a csv file.

The csv output file included 122,223 rows, which were manually processed to provide one line per company with the following fields: company's name, year of reporting, materiality benchmark account, threshold (%), materiality's value, audit's company and auditor senior partner. The disclosure of the mentioned fields is mandatory for companies.

This process has led to a final sample of 1,542 observations over the sample period 2016-2021, displayed in Table 1.

	2016	2017	2018	2019	2020	2021	Total
FTSE 350 companies	351	351	351	352	351	351	2107
Companies with a valid auditor report extracted	267	261	252	262	249	251	1542
Coverage	76%	74%	72%	74%	71%	72%	73%

Table 1: Final sample

As it can be seen in Table 1, a sample loss of 27% of the total sample was identified during the data extraction process and it corresponds to cases in which the annual report could not be downloaded or the extraction process failed. Despite these limitations, the remaining sample provides valuable insights into the research question at hand and can serve as a foundation for future studies.

Table 2 shows the number of reports of each sector in the sample for the years 2016 to 2021. The most representative sector is the Financials sector, with a range of 71 to 83 reports by year. Industrials is second, ranging from 32 to 48 reports

³ Please see: <https://ucrel.lancs.ac.uk/cfie/>

per year. The Consumer Discretionary sector is the third with a range of 34 to 38. All the other sectors have less than 20 reports per year.

Sector	2016	2017	2018	2019	2020	2021	Total
Communication Services	12	13	11	14	11	15	76
Consumer Discretionary	38	38	35	34	38	37	220
Consumer Staples	15	14	15	15	12	9	80
Energy	3	3	2	3	1	3	15
Financials	71	71	69	74	83	81	449
Health Care	17	14	10	9	10	10	70
Industrials	47	45	44	48	32	37	253
Information Technology	16	13	16	18	14	17	94
Materials	23	22	21	18	17	17	118
Real Estate	17	17	18	20	20	15	107
Utilities	8	11	11	9	11	10	60
Total	267	261	252	262	249	251	1,542

Table 2: Number of reports by sector and per year

The Energy sector had the lowest number of reports per year with a range of 1 to 3. Overall, the Financials sector has consistently been the sector with the highest percentage of share.

Chapter 5

Results

5.1 Descriptive Statistics

The descriptive statistics of the variables collected from both the audit reports and Bloomberg are presented in Table 3.

Variables	Mean	Standard Deviation	Minimum	Median	Maximum
From audit reports					
Materiality	25,962,391	65,011,275	170,000	9,635,000	1,000,000,000
Assets	20,010,668	24,359,981	1,000,000	12,240,000	200,000,000
Profit Before Tax	28,834,105	77,945,534	170,000	8,000,000	1,000,000,000
Revenues	12,577,276	18,464,344	520,000	5,125,000	85,000,000
Equity	31,702,135	37,402,178	2,000,000	18,195,000	157,000,000
Expenses	11,606,667	9,073,088	1,280,000	15,240,000	18,300,000
Other	79,700,000	42,466,026	15,900,000	62,000,000	124,000,000
Threshold	3.55%	2.66%	0.10%	4.70%	75.00%
Assets	1.15%	0.50%	0.11%	1.00%	4.60%
Profit Before Tax	4.78%	0.94%	0.50%	5.00%	20.00%
Revenues	0.69%	0.52%	0.10%	0.60%	5.00%
Equity	1.31%	0.70%	0.50%	1.00%	5.00%
Expenses	1.63%	0.64%	0.90%	2.00%	2.00%
Other	11.43%	28.03%	0.50%	1.00%	75.00%
From Bloomberg					
Total Equity	2,953,198,857	12,224,512,929	-4,590,000,128	754,000,000	206,688,993,280
Earnings per share (EPS)	0.57	1.87	-	0.22	24.95
Total Assets	24,828,776,411	174,626,148,803	315	1,741,000,000	2,968,791,023,616
Total Revenues	4,716,313,177	14,584,504,085	170	1,055,299,968	218,297,999,360
Price Volatility	34.39%	19.64%	2.55%	30.31%	196.31%
Audit Fees	354,884	572,470	15,000	160,000	4,270,000

Table 3: Variables' descriptive statistics

5.2 Benchmark Agenda

In the data extraction 24 different benchmarks were found that were aggregated into 6 categories (Table 4):

Category	Initial Benchmark Checklist
Assets	Net Assets
	Total Assets
Equity	Total Shareholders' Funds
	Total Equity
	Gross Premium Written
Expenses	Gross Management and Other Fees
	Total Expenses
Other	Materiality could not be identified
	Profit Before Taxes
	2 Years Average Profit Before Taxes
	3 Years Average Profit Before Taxes
	5 Years Average Profit Before Taxes
	5 Years Average Profit Before Taxes
	4 Years Average Profit Before Taxes
	Adjusted 5 Years Average Profit Before Taxes
	Adjusted 3 Years Average Profit Before Taxes
	EBITDA
	Adjusted EBITDA
	Gross Margin
	Total Revenues
	Revenues from Continuous Operations
	Retail Profit
3 Years Average Total Revenues	
4 Years Average Total Revenues	

Table 4: Categorization of benchmarks

5.3 Audit Companies

A strength of using the FTSE350 as a sample is that most companies are audited by “Big Four” audit firms which adds comparability within sample.

Table 5 summarises the number of companies in our sample audited by each audit company for the period. On average, big-four firms are responsible for auditing 93% of the firms. The remaining 7% were audited by: BDO, Evelyn Partners, Grant Thornton International and Mazars.

Audit company	2016	2017	2018	2019	2020	2021	Total	(%)
Deloitte	64	64	56	59	57	53	353	23%
Earns & Young (EY)	42	44	42	45	48	47	268	17%
Klynveld Peat Marwick Goerdeler (KPMG)	77	66	72	74	61	59	409	26%
PricewaterhouseCoopers (PwC)	73	73	70	69	64	66	415	27%
Others ⁴	11	14	12	15	19	26	97	7%
Total	267	261	252	262	249	251	1,542	

Table 5: Number of reports by audit's company per year

5.4 Key Benchmarks Breakdown

Following a review of audit reports, auditors use a variety of materiality benchmarks, each with a unique range of percentages. The numerous benchmarks utilized and their corresponding percentage ranges are listed in Table 6.

Benchmark	2016	2017	2018	2019	2020	2021	Total	(%)	Range %
Assets	53	65	60	59	74	63	374	24.30%	[0.1-4.6]
Equity	11	5	5	8	13	10	52	3.40%	[0.5-5]
Expenses	0	0	0	1	1	1	3	0.20%	[0.9-2]
Revenues	7	9	13	17	24	28	98	6.40%	[0.1-5]
Profit Before Tax	192	179	171	176	133	146	997	64.70%	[0.5-12.9]
Other	4	3	3	1	4	3	18	1.20%	-
Total	267	261	252	262	249	251	1,542		

Table 6: Number of reports by benchmark used per year

(a) Profit before tax (PBT)

The use of profit as a standard for profit-making businesses is acknowledged by ISA (UK&I) 320 materiality criteria. PBT, which appears in 64.7% (997 reports) of the 1,542 reports with materiality disclosures, is the materiality benchmark that auditors of FTSE350 listed firms use most frequently. To calculate a

⁴ The remaining companies, with a lower representation in the FTSE350, are BDO (3%), Evelyn Partners (0.1%), Grant Thornton International (1.4%), Mazars (0.1%), MHA Mac Intyre Hudson (0.1%), RSM UK Audit LLP (0.3%) and firms that is not possible to identify audit's company (1.8%)- The percentages are the entire sample for the six years divided by the number of audited reports.

normalized profit number and remove significant distortions, auditors employ a range of PBT proxies that frequently exclude items like extraordinary items and one-time payments.

Due to covid-19 pandemic's impact on the economy, auditors decided to use the previous (three, four and five) year average of Profit Before Tax (PBT) as a yardstick for materiality in their evaluations. This strategy accounts for any variations in profit that might have happened within a single year, making it a more accurate and consistent way to measure a company's financial performance. The previous year's average gives a more comprehensive picture of the company's financial stability and lessens the effects of the pandemic's short-term volatility. This kind of approach increases from an average of 11.25⁵ reports per year from 2016 to 2019 to 34 (+202%) in 2020 and 35 in 2021 (+211%).

The range of percentages to determine the materiality used in audits varies greatly. For example, in the 2021 EY Auditor's report on Biffa PLC, a 0.5% gross margin was used, with the company reporting a £3.0 million gross margin. On the other hand, the 2016 KPMG Auditor's report on Balfour Beatty PLC used 20% of the normalized group profit before tax from continuous operations, with the group reporting £51 million of adjusted PBT.

(b) Assets

In addition to PBT, audit companies employ other standards. According to this report, "Assets" is a materiality benchmark that auditors frequently utilize, the second most used. 374 of 1,542 (mean 24%) reports that were evaluated employed the "Assets" materiality criteria. The study discovered that auditors utilize many options to demonstrate this benchmark, with "Net Assets" being the

⁵ simple average of the number of reports in 2016, 2017, 2018 and 2019 that were respectively 13, 8, 12 and 12. Considering the benchmarks: two-, three-, four- and five-year average PBT.

most frequently employed one as the foundation for assessing materiality in 249 of the 374 reports (67%).

(c) Revenues & Expenses

Auditors do not prioritize revenues and expenses as their main benchmarks. According to the sample under study, only 6.6% of reports relied on these metrics (6.4% on revenues and 0.2% on expenses).

Revenues and expenses are not always reliable indicators of a company's financial stability due to their volatility. Revenues can fluctuate greatly depending on many factors, such as changes in consumer demand, economic conditions, and competition. Expenses can also be affected by changes in the business environment, such as increases in the cost of raw materials or labour. The volatility of the proposed benchmarks is influenced by several factors. Since materiality requires consistency over time, high volatility would result in frequent adjustments to the applied percentage (range) bringing distortions.

(d) Equity

The equity benchmark ranks fourth with a 3.4% share. The financial sector, accounting for approximately 40%, is the most preferred sector using this benchmark. A further analysis of this trend will be conducted at a later time in section 5.4.1.

(e) Others

A total of 18 reports out of 1,542 (approximately 1%) were identified as having no identifiable materiality benchmarks in the "Others" financial statement categories. These reports were aggregated and, through additional research conducted by consulting the official websites of the companies, were found to be immaterial for the purposes of our analysis.

5.4.1 Key Benchmarks Breakdown: by sector

Table 2, presented in section 4.2, shows the number of reports of each sector for the years 2016 to 2021. The first step in the analysis is to break down the sample by sector. This involves categorizing the companies in the sample according to the sector they operate in. Once the initial categorization is completed, the analysis moves on to the second part, which involves examining the sample breakdown by sector and materiality benchmark used by each sector (Table 7). This second part of the analysis allows for a better understanding of the extent to which different sectors apply materiality in their financial reporting, and whether there are any patterns or trends in the way materiality is applied across sectors. By breaking down the sample in this way, the aim is to gain a deeper understanding of how companies in different sectors approach materiality in their financial reporting, and to identify any potential areas for improvement or further investigation.

Sector/ Benchmark	Reports	Average Materiality	Threshold	
			Maximum	Minimum
Communication Services	76	16,516,000	5.80%	0.50%
Assets	1	16,700,000	1.00%	1.00%
Revenues	5	1,788,400	1.00%	0.90%
Profit Before Tax	70	17,565,343	5.80%	0.50%
Consumer Discretionary	220	12,837,445	8.00%	0.10%
Assets	6	14,850,000	4.60%	0.40%
Revenues	23	10,408,696	1.00%	0.10%
Profit Before Tax	186	12,991,602	8.00%	2.80%
Other	5	-	-	-
Consumer Staples	80	48,146,023	5.20%	0.10%
Assets	3	2,566,667	0.70%	0.10%
Other	1	-	-	-
Revenues	15	16,576,667	5.00%	0.10%
Profit Before Tax	61	58,939,866	5.20%	4.00%
Energy	15	29,293,333	6.00%	0.50%
Assets	4	34,900,000	2.00%	0.50%
Revenues	4	42,500,000	0.50%	0.50%
Profit Before Tax	7	18,542,857	6.00%	2.40%

Table 7: Sample breakdown by sector (part 1)

Sector/ Benchmark	Reports	Average Materiality	Threshold	
			Maximum	Minimum
Financials	449	27,427,136	5.90%	0.50%
Assets	246	15,547,283	4.00%	0.70%
Equity	36	37,325,000	5.00%	0.50%
Expenses	2	16,770,000	2.00%	2.00%
Other	5	-	-	-
Revenues	6	3,239,167	1.00%	0.70%
Profit Before Tax	154	44,486,799	5.90%	2.00%
Health Care	70	30,037,586	6.00%	0.40%
Assets	9	11,311,111	2.00%	0.40%
Equity	4	4,355,000	2.00%	1.00%
Expenses	1	1,280,000	0.90%	0.90%
Revenues	12	3,541,333	1.00%	0.80%
Profit Before Tax	44	44,082,614	6.00%	1.00%
Industrials	253	15,172,482	20.00%	0.10%
Assets	3	9,000,000	1.00%	0.70%
Equity	5	18,600,000	2.00%	1.00%
Revenues	16	19,784,375	1.00%	0.10%
Profit Before Tax	228	14,851,702	20.00%	2.90%
Other	1	-	-	-
Information Technology	94	6,193,760	5.10%	0.50%
Assets	3	1,202,333	2.00%	1.00%
Revenues	8	13,162,500	1.00%	0.50%
Profit Before Tax	83	5,702,487	5.10%	2.50%
Materials	118	60,575,127	6.70%	0.30%
Assets	6	96,183,333	1.00%	0.50%
Equity	2	34,500,000	2.00%	2.00%
Revenues	5	7,400,000	1.30%	0.30%
Profit Before Tax	105	61,569,190	6.70%	2.00%
Real Estate	107	30,706,738	5.00%	0.40%
Assets	86	29,895,698	2.00%	0.70%
Equity	5	25,078,200	2.00%	1.00%
Revenues	3	13,666,667	1.00%	0.40%
Profit Before Tax	7	-	-	-
Other	6	97,800,000	1.00%	0.50%
Utilities	60	35,882,500	6.50%	0.20%
Assets	7	16,485,714	2.00%	0.20%
Revenues	1	3,800,000	0.40%	0.40%
Profit Before Tax	52	39,110,577	6.50%	2.00%
Total	1,542			

Table 7: Sample breakdown by sector (part 2)

In most sectors, including Consumer Discretionary, Consumer Staples, Energy, Health Care, Industrials, Information Technology, Materials, and Utilities, the primary metric used for materiality is PBT. In these sectors, PBT appears to be the most relevant metric for assessing the financial performance and materiality of the companies. In contrast, the Financials and Real Estate sectors use Assets as their primary metric for materiality, with PBT being a secondary metric.

One possible reason why Profit Before Tax is the most commonly used metric for materiality in most sectors is that it is a comprehensive indicator of a company's financial performance. Profit Before Tax takes into account not only the company's revenue and expenses but also factors such as depreciation and amortization, which can provide a more accurate picture of the company's financial position. In addition, Profit Before Tax is often used as a key performance indicator for investors and analysts when evaluating a company's financial health.

On the other hand, the Financials and Real Estate sectors may place more emphasis on Assets as a metric for materiality because these sectors are asset-intensive, with a significant portion of their value tied up in tangible and intangible assets. Therefore, tracking changes in asset values and ensuring their accuracy may be a more critical consideration for auditors in these sectors.

Figure 1 gives a clear vision of the benchmarks used from 2016 to 2021.

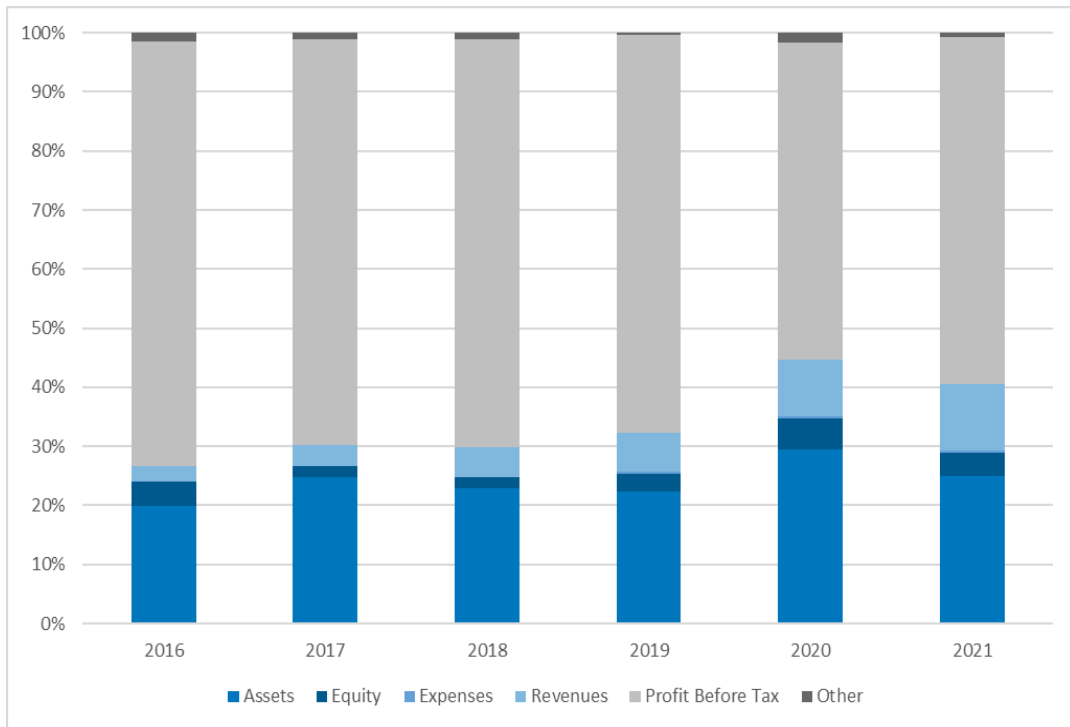


Figure 1: Benchmark distribution per year

5.4.2 Key Benchmarks Breakdown: by audit firm

Table 8 provides information on the materiality benchmark breakdown for each of the audit companies, including Deloitte, EY, KPMG, PWC, and non-Big 4 companies as a whole.

Audit Company/ Benchmark	Reports	(%)	Average Materiality	Threshold		
				Maximum	Average	Minimum
Deloitte	353		24,323,119	8.0%	3.8%	0.1%
Assets	69	19.5%	23,958,116	2.0%	1.4%	0.2%
Equity	13	3.7%	16,904,733	2.0%	1.4%	1.0%
Expenses	2	0.6%	16,770,000	2.0%	2.0%	2.0%
Profit Before Tax	243	68.8%	26,185,129	8.0%	4.9%	1.0%
Revenues	22	6.2%	15,068,182	1.3%	0.5%	0.1%
Ernst & Young (EY)	268		23,478,679	5.1%	3.4%	0.4%
Assets	63	23.5%	20,333,063	4.6%	1.1%	0.5%
Equity	25	9.3%	30,805,600	2.0%	1.1%	0.5%
Other	12	4.5%	-	-	-	-
Profit Before Tax	165	61.6%	21,891,012	5.1%	4.7%	0.5%
Revenues	3	1.1%	2,933,333	1.0%	0.7%	0.4%
KPMG	409		20,612,367	12.9%	3.4%	0.1%
Assets	88	21.5%	17,525,670	4.0%	1.1%	0.1%
Equity	7	1.7%	52,757,143	2.1%	1.5%	0.8%
Expenses	1	0.2%	1,280,000	0.9%	0.9%	0.9%
Profit Before Tax	266	65.0%	22,514,244	12.9%	4.7%	2.1%
Revenues	47	11.5%	11,251,702	1.0%	0.6%	0.1%
PWC	415		34,987,806	6.0%	3.8%	0.4%
Assets	105	25.3%	21,558,340	2.5%	1.0%	0.5%
Equity	3	0.7%	68,633,333	5.0%	2.3%	1.0%
Other	4	1.0%	-	-	-	-
Profit Before Tax	283	68.2%	41,085,419	6.0%	4.8%	2.3%
Revenues	20	4.8%	17,072,850	1.0%	0.7%	0.4%
Non-Big 4 Company	97		20,814,342	5.0%	2.8%	0.4%
Assets	49	50.5%	15,247,093	2.0%	1.2%	1.0%
Equity	2	2.1%	24,800,000	2.0%	1.5%	1.0%
Profit Before Tax	40	41.2%	29,911,067	5.0%	4.7%	1.4%
Revenues	6	6.2%	3,664,333	5.0%	1.4%	0.4%
Total	1,542					

Table 8: Materiality breakdown by audit company

After analysing the preceding tables, it isn't surprising that the preferred benchmark for audit firms is PBT. On average, the big-4 companies use this benchmark 68% of the time due to its strong correlation with the business's performance. The threshold used for this benchmark is about 4.8%, indicating that the companies set a materiality threshold based on the business's PBT. KPMG sets the highest threshold at 12.9%, while EY sets the lowest at 0.5%.

The second most commonly used benchmark by the big-4 companies is assets, with an average usage of 20%. PWC appears to be the most frequent user of this

benchmark, utilizing it around 25% of the time. This comes as no surprise, considering that PWC has the largest market share in auditing and is responsible for auditing most companies in the financial sector, which favours the use of this benchmark. The threshold used for this benchmark is approximately 1.1% on average, with EY using the highest threshold (4.6%) and KPMG using the lowest (0.1%).

Overall, it appears that there are no significant differences in the benchmarks used by the big-4 audit firms or the respective thresholds they employ. This suggests that these companies have similar approaches and standards when it comes to auditing and assessing the financial performance of their clients. One possible reason for this consistency could be the fact that audit firms operate within a highly regulated industry where standards and guidelines are strictly enforced. Additionally, using similar benchmarks and thresholds could help ensure that audits are conducted consistently across different clients and industries.

Chapter 6

Research Questions: Conclusions

6.1 RQ1: Is the risk of impacts of covid-19 reflected on materiality?

In this section, the analysis will aim to determine whether auditors have adapted to the increased volatility caused by the covid-19 pandemic. Auditors are expected to lower the materiality threshold, particularly for the sectors that were most affected. Given the challenges that most companies faced in 2020, auditors took extra precautions to identify potential manipulation of results.

Figure 2 shows the process followed to draw the conclusions of the research question being analysed.

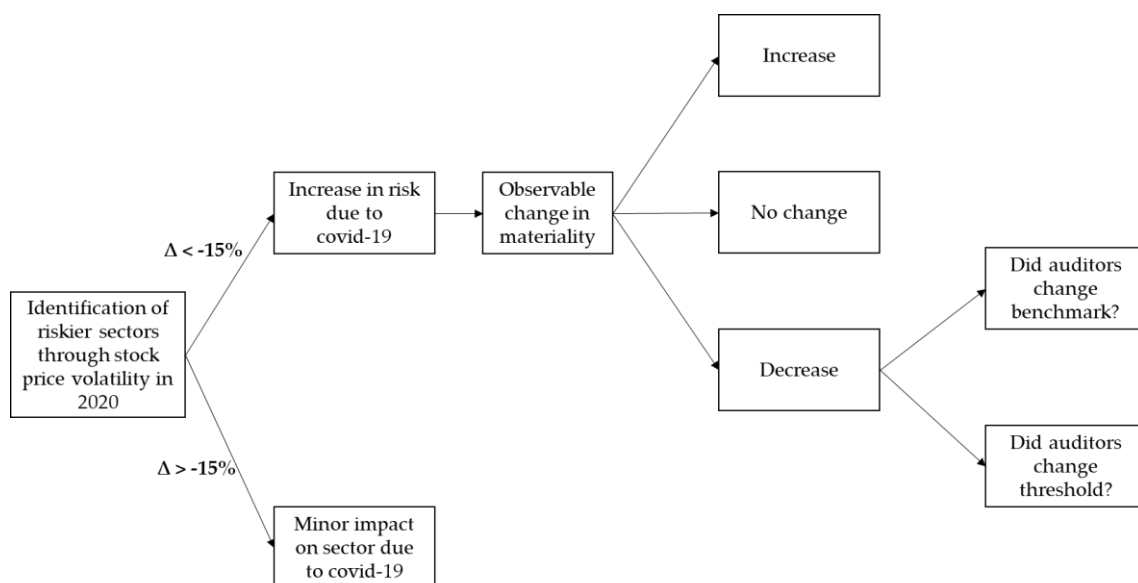


Figure 2: Approach adopted by auditors during covid-19: sequence of analysis.

6.1.1 Impacts per sector

The study of the impact per sector began by identifying those that had been most impacted by the pandemic. To do so, the change in the stock price of FTSE350 companies from December 31, 2019, to December 31, 2020 was used, as a proxy for the level of risk associated with those sectors.

Stock prices are often considered to be an accurate reflection of the level of risk associated with an investment. Investors use stock prices to predict the future performance of a company, and as a result, fluctuations in stock prices can be an indicator of increased or decreased risk. By identifying the sectors that have experienced the largest changes in stock prices over 2020 (Table 9), can be gained insight into the level of risk associated with those sectors.

Sector	Average Stock Price Change from 31/12/2019 to 31/12/2020
Communication Services	-12.05%
Consumer Discretionary	-24.62%
Consumer Staples	5.35%
Energy	-50.18%
Financials	10.50%
Health Care	4.10%
Industrials	-16.12%
Information Technology	5.31%
Materials	13.63%
Real Estate	-21.02%
Utilities	-6.80%

Table 9: Average stock price change from 31/12/2019 to 31/12/2020 by sector

Analysis of Table 9 shows that the Energy, Real Estate, Consumer Discretionary and Industrials sectors experienced the most volatility in terms of stock price change from December 31st, 2019, to December 31st, 2020. The Energy sector had a significant decrease in stock prices, with an average change of -50.18%. Similarly, the Real Estate, Consumer Discretionary and Industrials

sectors had a significant decrease in stock prices, with an average change of -21.02%, -24.62% and -16.12% respectively.

In contrast, the Financials and Materials sectors experienced the most significant increases in stock prices, with average changes of 10.50% and 13.63%, respectively. The Consumer Staples, Health Care, and Information Technology sectors also had positive average changes in stock prices, indicating relative stability during the pandemic.

The results obtained from identifying the sectors that have been most impacted by the pandemic using the change in stock price of FTSE350 companies are consistent with the findings of a recent study conducted by S&P Global⁶ that took a different approach. This study *“assessed the impact of the pandemic, on the credit risk of industries from a probability of default (PD) perspective”*. According to the findings, the following industries were adversely impacted in decreasing order: Airlines, Hotels Restaurants & Leisure, Energy Equipment & Services, Automobiles and Speciality Retail. These industries correspond to the sectors Industrials (Airlines), Consumer Discretionary (Hotels Restaurants & Leisure, Automobiles and Speciality Retail) and Energy (Energy Equipment & Services).

The impact of covid-19 on the real estate sector can be identified through stock price volatility, which tends to be more sensitive to changes in market conditions and investor sentiment than credit risk. Fluctuations in real estate companies' stock prices during the pandemic reflected investors' reactions to news and expectations about the pandemic's impact on the real estate market. While credit risk is based on factors such as the borrower's creditworthiness, loan terms, and economic conditions, it may take time for the pandemic's effects to be reflected in credit risk indicators such as the probability of default. Government stimulus measures and forbearance programs may also have temporarily mitigated the

⁶ <https://www.spglobal.com/marketintelligence/en/news-insights/blog/industries-most-and-least-impacted-by-covid-19-from-a-probability-of-default-perspective-january-2022-update> (February 2022).

pandemic's effects on credit risk. It makes sense to assume that the real estate sector was impacted by covid-19, given the significant disruptions the pandemic caused to the global economy and the real estate market. Reduced demand for commercial and residential real estate, delayed or cancelled construction projects, and decreased rental income, increased vacancy rates, and declining property values all presented challenges to the sector. As a result, it is reasonable to assume that the real estate sector was significantly impacted by covid-19.

6.1.2 Change in materiality

It can be seen, based on Table 10, that in 2020, the sectors with the highest percentages of reductions in materiality were Consumer Discretionary (71%), Industrials (66%), Energy (100%) and Real Estate (60%) in the FTSE 350 companies. High volatility in stock prices in the same year was also shown by these sectors, except for Real Estate, as indicated in the preceding Table 9.

Change in materiality in 2020						
Sector	Decrease	(%)	Increase/ Maintain	(%)	Total	Risky sector (based on table 9)
Communication Services	3	27.30%	8	72.70%	11	
Consumer Discretionary	27	71.10%	11	28.90%	38	X
Consumer Staples	5	41.70%	7	58.30%	12	
Energy	1	100.00%	0	0.00%	1	X
Financials	30	36.10%	53	63.90%	83	
Health Care	2	20.00%	8	80.00%	10	
Industrials	21	65.60%	11	34.40%	32	X
Information Technology	7	50.00%	7	50.00%	14	
Materials	8	47.10%	9	52.90%	8	
Real Estate	12	60.00%	8	40.00%	20	X
Utilities	3	27.30%	8	72.70%	11	
Total	119		130		249	

Table 10: Observable change in total materiality in 2020 by sector.

During the covid-19 pandemic, Materials, Consumer Discretionary, Industrials, and Energy sectors were among the most affected, with reduced demand for their products and services. For instance, Consumer Discretionary,

which includes tourism industries, suffered due to travel restrictions and the fear of contracting the virus.

Furthermore, an analysis was conducted with the intention of ensuring robustness and accuracy. To achieve this, two important variables - the level of risk associated with various sectors and the materiality of changes observed in those sectors - were utilized. The sectors identified as having the highest risk were assigned a value of 1, while the remaining sectors were assigned a value of 0. Similarly, materiality was assigned a value of 1 when it decreased, and 0 when it increased.

After these variables were established, the correlation between them was verified. The results of the analysis showed a strong linear correlation (coefficient of 59.4%) between the level of risk and the materiality of changes observed in various sectors.

6.1.3 Materiality decrease

In order to gain a thorough understanding of the outcomes of a financial audit, it is essential to consider whether any decrease in materiality levels is a result of adjustments made by the auditors or simply due to a lower amount of benchmarks used in the relevant sector. Distinguishing between these two possibilities is crucial, as a reduction in materiality levels due to auditor adjustments may imply identification of risk. Conversely, if the decrease is due to lower activity in the sector, and for that reason, the benchmark (for example profit before taxes) is lower, auditors didn't change their approach. The following Table 11 demonstrates both possibilities.

Sector	Distribution of companies that decrease materiality								
	Change in benchmark	(%)	Change in threshold						
			Decrease	(%)	Maintain	(%)	Increase	(%)	
Communication Services	3	100.0%	0	0.0%	0	0.0%	0	0.0%	
Consumer Discretionary	11	40.7%	1	3.7%	4	14.8%	11	40.7%	
Consumer Staples	1	20.0%	1	20.0%	2	40.0%	1	20.0%	
Energy	1	100.0%	0	0.0%	0	0.0%	0	0.0%	
Financials	11	36.7%	1	3.3%	17	56.7%	1	3.3%	
Health Care	0	0.0%	1	50.0%	1	50.0%	0	0.0%	
Industrials	10	47.6%	1	4.8%	8	38.1%	2	9.5%	
Information Technology	4	57.1%	0	0.0%	2	28.6%	1	14.3%	
Materials	3	37.5%	1	12.5%	4	50.0%	0	0.0%	
Real Estate	1	8.3%	0	0.0%	4	33.3%	7	58.3%	
Utilities	0	0.0%	1	33.3%	0	0.0%	2	66.7%	
Total	45		7		42		25		

Table 11: Change in threshold/benchmark- companies that have reduced materiality in 2020.

Upon analysing Table 11, a more comprehensive conclusion can be drawn regarding the auditors' approach. It appears that within the consumer discretionary sector, a significant proportion (81.4%) of companies have experienced a decrease in materiality levels. This reduction can be attributed to either a change in the benchmark (40.7%) or an increase in the threshold (40.7%). It is evident that the auditors have taken a meticulous approach by conducting an in-depth analysis of the companies' accounts within this sector.

Transitioning to the energy sector, it appears that the company in question reduced its materiality level by shifting the benchmark from profit before taxes to net assets. This decision showcases a wise approach taken by the auditing company, as they have opted for a less volatile benchmark to achieve greater accuracy in their evaluation.

Upon evaluating the Industrials sector, it is apparent that 47.6% of companies that reduced their materiality level have done so by changing the benchmark. Additionally, 38.1% of companies have not altered their threshold. As a result, it can be concluded that the outcomes are varied. Some auditors have opted to change their approach, while others have not, and the reduction in materiality levels could potentially be attributed to lower activity within the sector.

Concluding the analysis, in the Real Estate sector, the majority of companies (58.3%) have decreased their materiality level by increasing their threshold.

To manage the associated risks, auditors adjusted their audit approach, increasing materiality thresholds or changing the benchmark to require more evidence and resulting in more rigorous audit procedures. This approach ensured that auditors could provide reliable financial statements to stakeholders. Despite the challenges of auditing during the pandemic, auditors demonstrated their ability to adapt and manage risks effectively. The data suggests that companies' auditors in the Energy, Real Estate, Consumer Discretionary and Industrials sectors may have been successful in managing their risks during the pandemic, as evidenced by their approach.

6.2 RQ2: Does materiality level impact audit fees?

This section will look to answer if there is a relation between audit fees and materiality. The objective is to ascertain whether higher audit fees come from a reduced materiality criterion.

To evaluate this association, a linear regression analysis was done with audit fees as the dependent variable and materiality, total assets, total revenues, EPS, stock price volatility (for one year before reporting date), sector and reporting date as the independent variables. The regression model makes it possible to quantify the relationship between audit fees and these independent factors and to determine the importance of each variable's influence on audit fees.

The value of the variables, namely total assets and total revenues, were adjusted for a better model accuracy by applying the natural logarithm on the absolute value of (1-variable). This adjustment was made due to the disparate

values of the variables, with total assets ranging from 2,967 trillion to 90 million, and total revenues ranging from 218 billion to 370 million (GBP).

$$\begin{aligned}
 & \text{Audit Fees}_{i,t} \\
 & = \text{Audit Materiality}_{i,t} + \text{EPS12M}_{i,t} + \text{Total Assets}_{i,t} \\
 & + \text{Revenues12M}_{i,t} + \text{Price Volatility}_{i,t} + \text{error}_{i,t}
 \end{aligned}$$

Subscripts identify firm i in time t . The regression includes firm effects for industry and year. The results are presented in Table 12.

Regression Model- Audit Fees	
Intercept	-50.579 (0,000)***
<i>Audit Materiality</i> $_{i,t}$	-3.196 (0,000)***
<i>EPS12M</i> $_{i,t}$	-0.251 (0,013)
<i>Total Assets</i> $_{i,t}$	0.061 (0,043)*
<i>Revenues 12M</i> $_{i,t}$	-0.097 (0,017)**
<i>Price Volatility</i> $_{i,t}$	0.008 (0,051)
Industry Fixed Effects	Yes
Annual Fixed Effects	Yes
Number of observations	1346
R Square	0.896

Table 12: Linear regression results

The regression statistics section provides information about the overall fit of the model. The R-squared value of 89.63% shows a very good fit for the model.

It can be observed from Table 12 that the audit fees variable is explained by the materiality variable. This is supported by the low p-value and its significant

results. The opposite direction of the variables is suggested by the negative coefficient (-3.196), where lower values of materiality indicate higher fees. Additionally, the dependent variable is explained to a lesser extent by total assets and total revenues. The relationship between the variables and audit fees is evident due to their correlation with the size and activity level of the company. A higher significance level and a negative coefficient were observed for total revenues, indicating that the level of materiality decreases with an increase in sales value. Conversely, a significant positive relationship was observed for total assets, indicating that the level of materiality increases with an increase in the company's assets.

It can be concluded that the proposed relationship between audit fees and materiality exists. This relationship has the potential to be problematic when considered alongside the relationship with the level of audit risk. The conflict of interest between the company/shareholders and the auditor is a critical consideration in this conclusion. From a fee perspective, the company seeks to minimize costs, while the auditor seeks to maximize benefits. On the materiality side, the company prefers lower levels to inspire greater investor confidence, while the auditor prefers higher levels to minimize labour costs and maximize margins. These findings and the identified conflict of interest underscore the need for regulatory intervention in setting the level of materiality to minimize overall audit risk.

Looking at the relationship between audit fees and total assets, it becomes apparent that it is not an exceptional indicator of auditor scrutiny. This is because auditors are not required to have the same level of oversight for a company with a significantly higher asset value, such as HSBC with 2,967 trillion, compared to a company with much lower total assets, like 4imprint with only 90 million. However, an inverse relationship with total revenues highlights that auditors take a more comprehensive approach to companies with higher sales volumes.

This suggests that auditors have identified greater audit risk in such companies, particularly with regard to the potential for earnings manipulation through the creation of fictitious sales. The results of this approach indicate a level of auditor prudence and investor confidence in the auditing process, helping to mitigate the risks associated with financial fraud and manipulation.

6.3 RQ3: Does the change of auditor impact materiality?

In this section, an analysis will be made to determine whether there is a decrease in materiality when there is a change in auditor. The rationale behind this is that, when a change in auditor occurs, the company's internal controls, activities, weaknesses, and other relevant aspects may not be known by the new auditor. As a result, there is an additional risk associated with the change in auditor. If this additional risk is recognized by the new auditor, it should be reflected in the materiality assessment. Therefore, it is possible that materiality may be decreased when a new auditor takes over, as a more cautious and conservative approach to materiality may be adopted given the limited knowledge of the company.

The work done starts by identifying the number of companies that changed auditor or not per year (Table 13).

	2017	2018	2019	2020	2021
Auditor change	33	32	21	20	24
No auditor change	197	190	205	190	175
Not enough information	31	30	36	39	52
Total	261	252	262	249	251

Table 13: Companies in the sample that have changed auditor

After the companies that have changed their auditor have been identified, each company will be analysed to determine if their materiality level has increased, decreased, or remained unchanged. This analysis is crucial for evaluating the proposed thesis as it will allow us to assess if the change in auditor had any impact on the company's financial reporting. By examining the changes in materiality levels, insights can be gained into whether the reliability of the company's financial statements has been affected by the auditor switch.

	2017	2018	2019	2020	2021	Total
Decrease in materiality	9 27%	13 41%	9 43%	9 45%	6 25%	46 35%
Hold materiality	1 3%	2 6%	3 14%	0 0%	0 0%	6 5%
Increase in materiality	23 70%	17 53%	9 43%	11 55%	18 75%	78 60%
Total	33	32	21	20	24	130

Table 14: Change in materiality when there is a change in auditor (number of companies | percentage in each year)

The majority of companies (60%) increased their materiality level at some point during this period, with the highest percentage (75%) doing so in 2021. Conversely, the percentage of companies decreasing their materiality level is on average 35%. Finally, only a small percentage of companies (5%) maintained the same materiality level throughout the entire period.

The results in Table 14 appear to contradict the initial thesis that a change in auditor may lead to a decrease in materiality levels. While the thesis suggests that the limited knowledge of the company by the new auditor may result in a more conservative approach to materiality. Therefore, while it's possible that a change in auditor may impact materiality levels, the results suggest that it may not be a consistent or immediate effect, and that other factors may play a role in determining whether materiality changes.

Several reasons could explain this unexpected finding. One possibility is that higher materiality thresholds are set by new auditors due to a different

perspective on the company's risks and operations, as opposed to their predecessors.

It is also possible that companies might switch auditors because they are willing to set higher materiality thresholds, seen as a way to minimize the risk of restatements or other negative outcomes, creating a self-selection bias where companies with higher materiality preferences are more likely to switch auditors.

Another reason is that the new audit team typically has to put in more work to evaluate new internal controls, gather evidence, and get up to speed on the company's operations. As a result, to meet reporting deadlines, they may choose to use a higher materiality threshold that reduces the amount of work required for the audit.

Finally, the results may be affected by an unrepresentative sample or other factors not taken into account, such as differences in industry or company size. Further research could be conducted to investigate these factors and provide a more comprehensive understanding of the audit process.

Chapter 7

Conclusions

It is widely acknowledged that the role of auditors is crucial in ensuring transparency of results. The work of auditing is primarily based on the concept of materiality. However, it has been discovered that some of the results on materiality obtained from this work do not align with expectations. This disparity of results can be attributed to a clear lack of regulation on the issue of materiality.

The significance of the relationship between materiality and audit risk is widely recognized by auditors, and they adapt their approach accordingly, as evidenced by the recent adaptation of materiality in response to the covid-19 pandemic. However, some risks, such as the change of auditor, are not adequately factored into materiality, despite their potential impact. Additionally, materiality can be influenced by other factors that may not be easily discernible to investors, such as audit fees. It is important to consider these factors to ensure that materiality is accurately determined and effectively applied in the auditing process.

It should be noted that this work has its limitations. For instance, only companies from the FTSE350 are examined, which are predominantly audited by the big4 companies. Therefore, other important audit companies may have been left out. Additionally, the study focused solely on the UK, which has its own set of regulations. Furthermore, this work was the result of an exhaustive manual task of collecting data on materiality, which could lead to errors. Nevertheless, this work should serve as a starting point for more comprehensive analyses that demonstrate the importance of materiality regulation and control.

The outcomes of this research should be shared with stakeholders, regulators, politicians, and audit firms to raise awareness of the need for materiality regulation and control. This would contribute to a more transparent and stable economy, which is essential for the welfare of society.

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