GOING-CONCERN UNCERTAINTY AND LOAN OFFICERS' INFORMATION SEARCH BEHAVIOR: EVIDENCE FROM EYE-TRACKING

Tuukka Järvinen
University of Vaasa
tuja@uva.fi

Emma-Riikka Myllymäki
Aalto University School of Business
emma-riikka.myllymaki@aalto.fi

Nina Sormunen
EY Finland (formerly Copenhagen Business School)
nina.sormunen@fi.ey.com

Laura Winther Balling
Copenhagen Business School
lwb.msc@cbs.dk

GOING-CONCERN UNCERTAINTY AND LOAN OFFICERS' INFORMATION SEARCH BEHAVIOR: EVIDENCE FROM EYE-TRACKING

ABSTRACT

The purpose of this experimental eye-tracking study is to examine whether going-concern (GC) modification and the signing audit firm (Big 4 vs. non-Big 4) capture the perceived credibility of the audit report, and hence affect loan officers' information search behavior in their loan granting decision-making process. The audit report is found to be the most credible when it includes the GC paragraph signed by a Big 4 auditor, and the least credible when it is clean and signed by a non-Big 4 auditor. By measuring visual attention of the participants, the results suggest that that the credibility of the audit report has an impact on 1) lenders' attention to the audit report *per se*, 2) the attention-directing effect of the GC modification, and 3) lenders' overall information search patterns, but only in the early stage of information search since the effect dilutes as more information is gathered.

Keywords: lending; audit report; information search; source credibility; going-concern

INTRODUCTION

Especially in the aftermath of the global financial crisis, there has been an ongoing discussion about the auditors' role in assessing financial distress of a client company, and in particular, about the relevance of audit report going-concern modification for the users of financial statements (Carson et al. 2013). This discussion relates to the actual quality of the audit (i.e. whether auditors are properly fulfilling their role and providing a warning in audit reports when the client is financially troubled), and also to the perceived relevance of the going-concern modifications per se. In this regard, an important stakeholder group consists of loan officers, who are expected to use audit reports in their decisions related to loan granting (e.g., Firth 1980; Gul 1987; Bamber and Stratton 1997; LaSalle and Anandarajan 1997). Prior empirical research has provided mixed findings on the impact of a going-concern modification on lenders' decisions (Bessell, Anandarajan and Umar 2003; Guiral-Contreras, Ruiz, and Choi 2014). We join this discussion by applying eye-tracking technology, i.e. measurements of visual attention - where on the screen a user looks - to thoroughly examine whether and to what extent the content of the audit report has communicative value for loan officers' *decision-making process*, when the loan applicant has financial problems.

Prior studies focus mainly on whether or not lenders grant the loan (i.e., the final decision). However, the *information search* preceding the final decision-making is a critical aspect of many decision tasks (Maines and McDaniel 2000; Blay, Kadous, and Sawers 2012), both in terms of the efficiency of the process and the quality of the decisions (Blay et al. 2012). Therefore, the current study scrutinizes the loan officers' visual attention to different financial and non-financial information during the information search. As summarized by Birnberg and Shields (1984), in accounting decision-making processes, attention and memory "*are important to a complete understanding of how accounting data are used and to interpretations of the existing research"*.

We extend the literature on the decision-making process of loan officers and the relevance of the going-concern modification by conducting for the first time an experimental eye-tracking study on whether the type of auditor's report (clean vs. unqualified opinion with a going-concern emphasis of matter paragraph[1]), and the perceived credibility of the source (name of the signing audit firm) affect professional loan officers' information search behavior in the loan evaluation process. Based on the prior audit quality literature (e.g., Teoh and Wong 1993; Francis, Maydew, and Sparks 1999; Eshleman and Guo 2014; Sormunen 2014) suggesting that Big 4 audit firms are widely perceived as "brand name" audit firms providing higher quality auditing than smaller audit firms, we argue that the impact of the audit report may not depend solely on the type of audit report, but also on the perceived credibility of the source, that is, whether the signing audit firm is a Big 4 firm or a non-Big 4 firm.[2] As pointed out by Guiral-Contreras et al. (2014), prior studies have largely ignored factors which may moderate the relevance of a going-concern modification to loan officers' decision-making process, such as the name of the signing audit firm.

Our assumption is that the perceived credibility of the audit report depends on both the existence of going-concern modification (more information is expected to imply greater credibility than less information in case of a financially distressed firm) and the credibility of the signing auditor per se (Big 4 signed audit report is expected to be more persuasive than non-Big 4 signed audit report). This assumption is supported by the results of our manipulation check questions, which suggest the following "rank" of perceived credibility for the audit report (from the highest to the lowest credibility): going-concern modification by a Big 4 firm, clean opinion by a Big 4

[1] In this study the term "going-concern emphasis of matter paragraph" is used interchangeably with "going-concern modification".

[2] Big 4 firms are expected to have better resources and quality standards. Sormunen (2014), for example, reports that, in addition to checking the audit opinion itself, interviewed loan officers indicated that they also check the name of the audit firm signing the audit report.

firm, going-concern modification by a non-Big 4 firm, and clean opinion signed by a non-Big 4 firm. Thus, our interest is to investigate whether there are differences in the lenders' information search, depending on which type of audit report they read.

In the course of information search, differences can occur in the attention to the different types of information available and in the order of the information collected (see for example Ford et al. 1989). Eye tracking is a highly relevant method to address our research question, because it gives us information about where participants **actually** look when processing loan applications, in contrast to traditional methods like interviews and questionnaires that tend to say more about what participants **think** they do.[3]

To the best of our knowledge, there is only one work in progress study in the audit research field, Sirois, Bédard, and Bera (2017), that has used eye-tracking technology.[4] However, their study differ from ours with respect to the following main issues: 1) Sirois et al. (2017) focus on the attention-directing role of recently introduced key audit matters (KAMs) (see IAASB 2015a[5]), whereas we are interested in the role of the audit report (the going-concern modification, in particular) when the company is financially distressed, and the impact of the signing auditor; 2) Sirois et al. (2017) conduct the experiment with accounting students, while the participants in our exper-

[3] The basic logic of eye tracking is the so-called eye-mind hypothesis (going back to Just and Carpenter 1980) that what people look at is also what they are cognitively processing; this is not a one-to-one correspondence, but there is a very close relationship. This means that registering where people look gives us an indication of what participants spend cognitive resources on, and in turn allows us to draw conclusions about their information processing. In practice, we work with a remote eye tracker where a camera under the screen measures each participant's eye movements as he or she works with the loan application (more detail in section 3.2 and 3.3 below).

[4] In the accounting research field more generally, Chen, Jermias, and Panggabean (2016) use eye-tracking technology to investigate managers' visual attention to balanced-scorecard performance evaluations.

[5] KAMs are defined as "*Those matters that, in the auditor's professional judgment, were of most significance in the audit of the financial statements of the current period. Key audit matters are selected from matters communicated with those charged with governance*" (IAASB 2015a). Disclosure of KAMs in the audit report is mandatory only for listed entities and their number and content may vary significantly from audit to audit.

iment are professional loan officers who are in a position to make appropriate judgments on lending facilities and associated issues in relation to a loan application. This constitutes a more naturalistic experimental set-up and thus potentially allows us to draw more generally valid conclusions.

Utilizing the eye-tracking data, we investigate the audit report's impact on lenders' decision-making process, and provide several new insights. First, we analyze lenders' attention (i.e., eye fixation duration) to each audit report paragraph to explore how lenders read the audit report, and whether it depends on the going-concern modification and the perceived quality of the signing audit firm. The results indicate that the attention to the audit opinion and to the GC paragraph is the greatest when the report is signed by a Big 4 auditor. Interestingly, lenders spend more time in reading the (unmodified) opinion and the GC paragraph when the report is signed by a Big 4 auditor than when it is signed by a non-Big 4 auditor.

Second, we examine whether the content of the going-concern modification have an attention-directing effect on the parts that are referred to in the going-concern paragraph, and does such an effect depend on the signing audit firm. It is found that the going-concern paragraph has an attention-directing effect since the information most explicitly mentioned in the going-concern paragraph (i.e. loans restructuring in our experiment) is accessed more rapidly, but only when the audit report is signed by a Big 4 auditor. This finding suggests that when the information about going-concern uncertainty is coming from highly credible source, lenders tend to follow the directions provided. Our result regarding the attention-directing effect is overall in line with that of Sirois et al. (2017) who report evidence of the attention directing impact of KAMs.

Third, we examine whether going-concern modification and signing audit firm have an effect on differences in the attention to specific types of information in the financial statements and the

annual report (such as loans or working capital –related information). We analyze lenders' overall information search by first categorizing the information available in the experimental task, and then measuring the attention to specific types of information by the eye fixation duration to a specific area of interest. We examine separately the lenders' attention to the financial statement information related to loans, working capital, income statement and ratios, and fixed assets. Moreover, we examine the lenders' attention to non-financial information, that is, management's discussion about the current situation, future prospects, and loans-related information, separately. The empirical findings indicate differences in the attention to financial information. These differences are, however, statistically significant only in the beginning of the information search – that is, immediately after reading the audit report. Specifically, we find that in the beginning of the information search, lenders who read clean audit report signed by a non-Big 4 auditor (the lowest perceived credibility) spent significantly more time on reading about loans, working capital, and fixed assets –related information compared to lenders who read GC modification signed by a Big 4 auditor (the highest perceived credibility). We conjecture that lenders who have read the least credible audit report are prone to start searching for more credible financial information (compared to non-financial information) about how the loans and working capital have been managed, in order to make inferences about financing and future liquidity and profitability of the company.

In addition to scrutinizing lenders' information search behavior, we also test whether the final decision of lenders' willingness to grant the loan is affected by the content of the audit report. While we do not find that the going-concern modification and the signing audit firm have an effect on the decision to *decline* granting the entire loan, we do find that lenders are more likely to fully grant the loan (i.e., the full amount) when they have read clean report signed by either a Big 4 or a non-Big 4, or GC modification signed by a non-Big 4. That is, lenders who have read the clean

report seem to be positive about granting the loan. Interestingly, the lenders who read the GC modification signed by a non-Big4 auditor are as positive. We conjecture that other information gathered may have overridden the audit report information by the time they make the final decision. However, when lenders have read the same GC modification but signed by a Big 4, they are more likely to only partially grant the loan (i.e. not the full amount). These findings imply that the persuasiveness of Big 4 signed audit reports still have some influence even after gathering all the other information, whereas non-Big 4 signed GC modification is ignored in the final decision stage.

Overall, the findings of this study suggest that lenders do consider the credibility of an audit report in their information search when the company appears to have financial problems. Our study contributes to the literature on the loan granting decision-making process, and the impact of going-concern modification. This is to our knowledge the first experimental study examining the effect of source credibility (Big 4 versus non-Big 4) on the information search behavior of professional loan officers. Moreover, while previous studies have analyzed the effects of modified audit opinions on lenders' final decisions, they have largely ignored the information search behavior of lenders. Eye-tracking technology gives a better understanding of whether users read and integrate auditor's reports differently, and whether the attention paid to specific information in the financial statements and annual report is affected by the perceived credibility of the audit report. Overall, this study provides important new evidence on the value of audit reports for loan officers in their decision-making process, and specifically, in the context of a financially distressed company.

The remainder of this paper is structured as follows: Section 2 discusses the relevant prior literature and presents the research question. Section 3 presents the experimental research design.

Thereafter, the findings are presented and discussed in section 4 and conclusions are presented in section 5.

RESEARCH QUESTION

The role of the emphasis of matter paragraph indicating going-concern uncertainty or other substantial uncertainty on lenders' loan decisions has gained a lot of attention in the prior literature (e.g., Firth 1980; Gul 1987; Bamber and Stratton 1997). In the context of a financially distressed company, examining the audit report content - whether or not the report includes a going-concern paragraph - is important. When a company's financial situation deteriorates, making lending decisions, especially for an existing client, becomes more challenging.[6] Moreover, financially distressed companies have incentives to manipulate earnings to hide their distress (e.g., Rosner 2003). In line with these arguments, Holder-Webb and Sharma (2010) report that lenders are primarily sensitive to the financial conditions of the firm and the perceived reliability of corporate reporting. It could be assumed that in these situations, lenders are likely to consider the persuasiveness of the auditor more carefully when they attempt to predict future corporate performance. Therefore, our research examines the role of source credibility, which is discussed in the next section.

Audit report and source credibility

An important factor that could affect the use and interpretation of an audit report is the credibility of the source of the information. The concept of *source credibility* builds on the assumption that the inferential value of information in decision making is considered in light of its source

[6] Due to lenders' pervasive avoidance of credit losses to the bank after the financial crisis (e.g., Nilsson and Öhman 2012), it could be assumed that making lending decisions have become even more challenging in recent years. Especially when the loan applicant is an informationally opaque small or medium-sized enterprise, the repayment ability is very difficult to evaluate (Berger and Udell 2006).

(Hirst 1994). Thus, information from low-credibility sources is assumed to be less persuasive in decision making than information that comes from high-credibility sources (Pornpitakpan 2004).[7] When financial statements are verified by a knowledgeable and diligent source, the information is presumed to have greater value for the decision maker (King, Davis, and Mintchik 2012). By contrast, financial information from a low-credibility source could cause the lender to exercise additional professional skepticism regarding the financial statements and the audit report.

Big 4 auditors are generally viewed as higher quality auditors compared to non-Big 4 auditors. Big 4 auditors are expected to have better resources and higher internal standards, and hence, to be more likely to detect and report financial statement misstatements than non-Big-4 auditors (Lennox 1999; Francis 2004). Moreover, observed differences in audit quality may also stem from differences in perceived auditor independence. Smaller audit firms might be more client-friendly because of economic pressure, and in order to keep their clients they may postpone the issuance of a modified opinion for as long as possible (DeAngelo 1981). Archival studies examining the value relevance of Big4 audits in debt pricing have found mixed evidence (e.g., Fortin and Pittman 2007; Kim, Simunic, Stein and Yi 2011; Cano, Sánchez Alegría and Torres 2008; Karjalainen 2011). Two experimental studies, McKinley, Pany and Reckers (1985) and Miller and Smith (2002), investigated whether size of audit firm affects loan granting related decisions, but did not find any significant impact. However, they did find that audit firm size significantly affected respondents' perceptions of the execution of an audit, financial statement reliability and auditor independence.

[7] Birnbaum and Stegner (1979) define source credibility as consisting of three components: source expertise, source bias, and judge bias. Source expertise refers to the perceived correlation between the source's report and the outcome, while source bias refers to the expected difference between the "source's report and the true state of the nature" (Birnbaum and Stegner 1979). Judge bias refers to the decision maker's own preferences, initial point or other point of view that influence his abilities to assess information in particular context (Alexander 2003; Birnbaum and Stegner 1979). Theories of source credibility commonly suggest that decision makers consider information about the source's perceived expertise and bias (trustworthiness) when considering information persuasiveness (Pornpitakpan 2004).

To conclude, when all above findings are viewed through the source credibility framework (Birnbaum and Stegner 1979), it could be expected that Big 4 auditors are perceived as more competent and less biased sources than non-Big 4 auditors. However, prior evidence on the effect of Big 4 on lenders' decision-making is limited to observable final outcomes of loan decisions (e.g. granting recommendation or interest), and is therefore not able to give insights on whether lenders information processing strategy depends on the size of the loan applicant's audit firm.

Going-concern modification, source credibility, and information search behavior

A going-concern modification has been theorized to work in at least two different ways in lenders' decision-making (Bamber and Stratton 1997). First, it can act as an independent "second opinion" of serious financial uncertainty and therefore provide additional information for decision making (Bamber and Stratton 1997; Gul 1987). Accordingly, decision-makers may perceive a going-concern modification as a warning signal that indicates that a company is more risky (Guiral-Contreras et al. 2014). Second, the content of a modified going-concern paragraph can direct lenders' attention to specific elements of financial statements that raise concerns of continued existence (Bamber and Stratton 1997). Before making the actual lending decision, both roles of 'warning signaling' and 'attention directing' could be expected to affect the lenders' *information search behavior*. In the former case, a going-concern modification may primarily corroborate the seriousness of financial distress, but also affect lenders' effort and pattern in information acquisition. In the latter case, going-concern modification acts as a trigger for subsequent acquisition of specific information.

Previous research has mainly investigated the effect of going-concern modification on lenders' final decision, but the evidence on lenders' information search behavior is scarce. The few

exceptions are Bamber and Stratton (1997), who found that an uncertainty modification did not increase lenders' attention to the financial statement's uncertainty footnote that was mentioned in the report, and Bessell et al. (2003) who found only weak evidence that going-concern modifications increased the need for additional information of reported uncertainty. Gul (1987) however, found that lending officers' perceptions of risk and their demand for additional information both increased as a result of an audit qualification. These results could be partially biased as their measures are based solely on self-reported weighting after decision-making. For instance, participants may have checked the footnote, but because they have found it uninformative or redundant, they have recalled it as unimportant afterwards because of memory distortion (i.e. hindsight bias).

More recently, Sirois et al. (2017) found using eye-tracking technology that the key audit matters mentioned in the auditor's report affect the participants' information search by increasing their visual attention to financial statements disclosures mentioned in the auditor's report. Differences in the visual attention to accounting information has been theorized to indicate how participants evaluate or comprehend different cues presented to them (Chen et al. 2016). In terms of eye-tracking, longer duration of eye fixation time on specific area of the screen indicate higher relative importance of the cue shown in that area, which in turn increases the cue's weight in decision-making process (Fiske 1980; Birnberg and Shields 1984; Chen et al. 2016).

In contrast to Sirois et al. (2017), our study focuses on the information search of professional loan officers and in the context of a financially distressed client company. Moreover, previous studies have not investigated whether the credibility of the source of the audit report affects lenders' information search behavior in a situation of a financially distressed loan applicant – a setting where a second independent opinion could be particularly useful. Based on the source credibility and going-concern literature discussed above, we set the following research question:

RQ: Do the going-concern modification and the signing audit firm have an effect on lenders' information search?

Our study consists of following scenarios. ***Going-concern paragraph, signed by Big 4:*** When a Big 4 auditor signs an unqualified opinion with a GC paragraph, lenders might accept the GC threat without questioning it, and perceive the paragraph as a reliable "second opinion" of increased risk. ***Clean report, signed by Big 4:*** When the audit report is clean and signed by a Big 4 auditor, lenders could be expected to trust the audit report's conclusion, and not explicitly question the company's continued existence. ***Going-concern paragraph, signed by non-Big 4:*** When a non-Big 4 auditor signs an unqualified opinion with a GC paragraph, lenders might be more skeptical about the audit and financial statements, but still be more informed by the company's situation due to the GC paragraph. ***Clean report, signed by non-Big 4:*** When the audit report is clean and signed by a non-Big 4 auditor, lenders may not be assured that the clean report can be used as a guarantee that a distressed firm is not having substantial GC uncertainty. In addition to the reliability of the company's GC status, when the company is financially distressed, the credibility of the signing auditor might have an impact on the reliability of the financial statements in general.

Our study approaches the research question by considering three ways in which the differences in the information search behavior could be manifested. ***First***, we consider the audit report *per se*. Since the most common audit report is the standard clean report, the existence of a GC paragraph most likely affects the lenders' attention to the audit report in itself. Moreover, based on the source credibility, the signing audit firm could also have an impact on how closely the lender reads the audit report. Thus, we explore **lenders' attention to different parts of the audit report**.

Second, as previously discussed, the attention-directing role of the GC modification could be expected to have an effect, such that the modification acts as a trigger for subsequent acquisition of specific information that is explicitly mentioned in the GC paragraph. Initially, direction of attention could be expected when simply comparing the information search of lenders who read a GC modification to those who read a clean report without the modification. Therefore, we explore the **attention-directing role of the going-concern modification**. However, given the potential effect of source credibility, we expect the attention-directing effect to depend on the signing audit firm in addition to the GC modification, and therefore consider the two factors jointly.

Third, one of the reasons for the mixed findings in prior studies investigating lenders' final decisions might be the fact that decision-makers are compensating lack of sufficient information and lower auditor reliability by verifying or acquiring (additional) information by themselves. Existence/non-existence of a GC modification and perceived source credibility may affect lender's information processing strategy; the extent and the type of information gathered, and the order of the information acquisition. For example, lenders might search information more extensively when they do not have the "guidance" from the GC modification, or when the perceived credibility of the signing audit firm is lower. By contrast, when the audit report includes a GC modification or is from a highly credible source, lenders might read the information more superficially.[8] Moreover, GC modification and source credibility might affect what kind of information is gathered. A notable distinction can be made between financial and non-financial information. The more credible information the lender requires, the more likely it is that he/she turns to the financial rather than

[8] Information processing via the central route suggests that the decision maker expends cognitive effort on the evaluation and actively processes arguments from different perspectives (Petty and Cacioppo 1986). By contrast, the peripheral route suggests more superficial information processing strategy, where the decision maker is unwilling to engage in much thought on the information and is more passive or unmotivated to process the information extensively (Petty and Cacioppo 1986; Petty and Wegener 1999). The central route and peripheral route of information processing are manifested in how extensively a lender acquaints him/herself with the information.

the non-financial information, as financial information is considered more objective by the lenders (Bruns and Fletcher 2008; Mason and Stark 2004). In particular, differences might exist in the attention to specific financial and non-financial information that is crucial in order to make inferences about loan repayment prospects (e.g., working capital –related information or management's discussion about future prospects). Based on the source credibility theory, we expect **differences in lenders' information search behavior** depending on the signing audit firm in addition to the existence / non-existence of the GC modification.

METHOD AND PARTICIPANTS

The participants in the experiment were bank officers employed in international Danish and Finnish financial institutions. We first contacted several large banks to assess their willingness to contribute to the experiment. Then, we asked the banks to give contact information for loan officers with experience of making loan decisions in English. All bank officers in a position to make appropriate judgements on lending facilities or associated issues in relation to a loan application were asked to participate in our experiment. All experimental sessions were conducted individually on-site at the banks by one author of this paper. A total of 39 professional bank officers participated in the experiment.

Experimental design

Our eye-tracking experiment was a between-subjects design where bank officers were asked to perform a simple credit evaluation of a fictional existing client. In the experiment, partic-

ipants were randomly assigned to one of four groups. For each group, we manipulated two variables: Audit firm size in the audit report (Big 4[9] vs. non-Big 4 audit firm) and type of auditor's report (clean vs. unqualified opinion with a going-concern emphasis of matter paragraph). Thus, our treatment groups are: (1) an unqualified opinion with a going-concern emphasis of matter paragraph [10] signed by Big 4 audit firm; (2) clean audit report signed by Big 4 audit firm; (3) an unqualified opinion with a going-concern emphasis of matter paragraph signed by non-Big 4 audit firm; and (4) clean audit report signed by non-Big 4 audit firm.

In the experimental task participants were asked to read on a computer screen the latest audited financial statements of an existing client seeking to refinance an expiring loan for the amount of 2.9 MEUR.[11] The case materials were built from financial statements of a real Finnish limited liability company that filed a petition for reorganization. Our case company is a retailer that has four department stores in mid-sized cities, turnover totaling 56 MEUR and value of assets about 16 MEUR. In order to raise concern of continued existence, we slightly modified the company's financial statements to show high growth in sales, but recent poor profitability.

The information provided in the case consists of descriptive information about the company and its products, essential loan terms (i.e. payable monthly over one year and description of collateral), complete financial statements, and an annual report including key financial ratios and a variety of non-financial information.

[9] We use the brand name of the biggest (by market share) Big4 auditor in each country: Deloitte for Denmark and PwC for Finland The non-big4 auditor had a fictional, local-sounding name in both countries.
[10] The content of uncertainty paragraph was prepared in collaboration with experienced auditor.
[11] The Finnish and Danish versions of the cases were nearly identical. Only the names of the case company, including subsidiaries, auditors (audit firm), persons, cities, and similar names mentioned in the cues were adjusted to sound local. For the audit reports, the 'standard' paragraphs were taken from the respective country auditing standards. The Danish version of the audit report included "Statement on the Management review" paragraph, which is required by the country's auditing standards.

Procedure

At the beginning of the experimental session, loan officers were briefed about the study and were told that their eye movements would be recorded.[12] In general, very little initial guidance was provided to the loan officers since they were told that all the instructions and relevant material would be presented to them in web format. After briefing, the loan officers were presented with an instruction page and the lending scenario. The lending scenario illustrated a loan request for a current client of the bank who is seeking to refinance an expiring loan for the amount of 2.9 million euros in order to continue in operations. Once loan officers clicked on the "Next" button, their eyes were calibrated using the native software of the eye tracker before starting the recording their eye movements and navigation activity.

As we wish to assess the role of modification and audit firm size in the auditor's report, after leaving the task description page, a page with a navigation menu consisting of hyperlinks to the sections of the financial statements appeared on the screen[13.] None of the hyperlinks would be active at that point, except the second one called "Auditor's report"; this was done in order to ensure that the loan officers would start by reading the audit report. Once a participant clicked on the link, the content of the auditor's report would appear. The links to the other sections of the financial statements remained inactive until participants clicked a back to menu button at the bottom of the audit report page.

From then on, the loan officers could freely navigate through the financial statements. Loan officers could also, at any time, click on a button at the bottom of each page to advance to the

[12] The experiment was run on a Tobii T120 eye tracker which measures the eye movements of participants at a rate of 120 HZ (i.e. 120 times per second, or every 8 milliseconds). The T120 is a remote eye tracker that measures participants' eye movements using a built-in panel below a computer screen. This means that, apart from two calibrations to set up the eye tracking, the participant experience is identical to reading from a standard computer screen. The participants were seated approximately 60 cm from the tracker and their gaze was calibrated using a five-point grid.

[13] Hyperlinks starting with 1) Annual report, 2) Auditor's report, 3) Balance sheet, 4) Cash flow statement, 5) Notes, 6) Profit and loss account, 7) Statement by management

"Make a decision" page where they could make their lending decision, i.e. indicate their willingness to recommend refinancing the loan. At the decision stage, participants were also asked to decide the appropriate loan margin, maximum amount of the loan that could be granted to the company and evaluation of loan risk (i.e., company's ability to service the debt). All questions were presented on a 6-point scale, except assessments of interest rate and maximum amount of the loan. To make all above decisions, participants could return to the full set of financial statements as before if needed. There was an additional calibration of the eye tracker before the decision pages.

Once the task was completed, a post-experimental questionnaire was used for follow-up questions. First, we asked whether the loan officer paid attention to the auditor. Second, several case-specific questions were presented. Similar to Sirois et al. (2017), we used six questions that assessed the extent to which users have confidence in the audit and the financial statements and the usefulness of the available information. After this, we presented more general questions which were not directly related to the case. We assessed the past experiences with and perceived differences between Big 4 and non-Big 4 auditors. Finally, we asked for more demographic information, such as educational background, gender, age and experience in years. The entire procedure took between 20 and 30 minutes.

DATA ANALYSIS AND RESULTS

The initial sample consisted of eye-tracking and questionnaire data from 39 lenders. However, due to poor quality of the eye tracking for four participants, our final sample is limited to 35 lenders. The descriptive statistics of the participants (not tabulated) show that they work in large banks that, on average, employ 18 600 persons internationally. Their mean (standard deviation)

age is 36.8 (8.2) years and 83 percent of them hold a university degree. 43 percent of the participants have over ten years of experience in commercial bank lending. 17 percent are females and 71 percent of the all participants are Finnish. While our univariate tests show that Danish participants are slightly older and more experienced than the Finnish lenders, we do not find that nationality of the participants affects our multivariate results (not tabulated).

Perceived credibility of the audit and financial statements

Before the main analyses, we first report the results of investigating whether the experiment manipulations are associated with the participants' confidence in the audit and the financial statements of the case company based on their answers to the questions presented after the decision was made. The questions are the following (all are on 6-point Likert-type scale):

1	"I am confident that *company's* financial statements are free from material misstatement, whether due to fraud or error:" [1; no confidence to 6; complete confidence]
2	"I am confident that the level of assurance provided by the audit of *company's* financial statements is high" [1; no confidence to 6; complete confidence]
3	"I am confident that auditor work is entirely adequate:" [1; no confidence to 6; complete confidence]
4	"I am confident that the amounts and disclosures in the audited financial statements are entirely credible" [1; no confidence to 6; complete confidence]
5	"On this scale, choose the number corresponding to your opinion of whether the audit report adds value to financial statements" [1; Definitely does not add value to 6; Definitely adds value]
6	"On this scale, choose the number corresponding to your opinion of whether *company's* financial statements are in accordance with private entity financial accounting standards (FAS)" [1; Definitely not in accordance to 6; Definitely in accordance]

We employ the following model to investigate the association between GC modification and audit firm size, and the level of confidence in the audit and financial statement:

$$Confidence\_sum = \alpha + \beta_1 CleanNonBig4 + \beta_2 GCnonBig4 + \beta_3 CleanBig4 + \beta_4 Experience + \varepsilon, \quad (1)$$

where the dependent variable *Confidence_sum* is the sum of the values of the six ordinal variables based on the questions presented above. Our independent variables of interest are determined

based on the four experiment manipulations: the interactions of size of the audit firm (Big 4 vs. non-Big 4) and type of auditor's report (clean vs. unqualified opinion with a going-concern emphasis of matter paragraph).

Model (1) examines the effect of each different experiment case, with a case of audit report with GC modification signed by Big 4 auditor being the control group (9 participants) for the other three cases. This case is assumed to represent the most credible audit. *CleanNonBig4* is the case of clean audit report signed by a non-Big 4 auditor (8 participants), *GCnonBig4* is the case of audit report with GC paragraph signed by non-Big 4 auditor (8 participants),, and *CleanBig4* is clean audit report signed by Big 4 audit firm (10 participants). The model includes a control variable, *Experience,* which is an indicator variable set to one if the participant has at least ten years of experience in commercial bank lending.[14]

The OLS regression results presented in Table 1 indicate that, compared to a case of GC modification signed by Big 4 auditor, lenders who read a clean audit report signed by a non-Big 4 are least confident in the audit and financial statement of the case company. *CleanNonBig* is negative and significant at the 0.01 level. Also, lenders who read GC modification signed by a non-Big 4 perceive the audit and financial statement as somewhat less credible compared to those who read the same report but signed by a Big 4. The coefficient on *GCnonBig4* is negative and marginally significant (at the 0.10 level). Lenders who read the clean report signed by a Big 4 do not consider the audit and financial statements less credible than those who read the GC modification also signed by a Big 4. These findings imply a "rank" of perceived credibility, where audit reports signed by a non-Big 4 are considered less credible, but within the non-Big 4 signed audit reports, the one with GC modification (i.e., more information) is somewhat more credible. Interestingly,

[14] Based on the following question: 'How many years of experience do you have in commercial bank lending?" [1; Under 5 years, 2; 5 to 9 years, 3; 10 to 14 years, 4; 15 years or more]

when the clean report (less information) is provided by a Big 4 auditor, the audit and financial statements are not perceived any less credible compared to GC modification (more information) by a Big 4 auditor.

Insert Table 1 about here

Lenders' information search behavior

The following sections report the analyses of 1) lenders' attention to the audit report, 2) the attention-directing role of the going-concern opinion, and 3) general information search. Given our small sample, dealing with outliers (i.e., extreme observations in time-based variables) is particularly crucial to ensure that few outliers are not driving results. To estimate the regression models, we employ robust regression with M-estimation (Huber 1973), which limits the influence of outliers in the Y direction. Furthermore, when appropriate, we also use the logarithm or square root transformed variables to address large kurtosis, which is problematic specifically in the very small samples (Keppel 2004, 147).

In most of our analyses, eye tracking is used to measure the time spent on a specific area of the screen, a so-called area of interest. Specifically, we use the *total fixation duration* to measure how long time the eyes were fixated on a certain area of interest, such as the signature and logo of the audit firm or the specific paragraph expressing the going-concern modification. Greater fixation duration in an area of interest is interpreted to indicate greater attention to the content of that area and the importance of that content (see e.g., Fiske 1980).

Lenders' attention to the audit report

The first analysis addresses how lenders actually read the audit report and how the attention to different parts of audit report depends on the audit opinion and the signing auditor. To begin with, the heatmaps shown in Figure 1 present the fixation locations and total fixation time for one representative participant for each of the four different audit reports.[15] A color scale moving from green over yellow to red is used to indicate fixation time, with red indicating longer fixation times in an area. Thus, a darker red spot over an area indicates that the lender has paid greater attention to this location. As exemplified by the red spots in Figure 1, the lenders focused proportionally greater attention on the opinion in the clean reports and on the modification in the reports with an emphasis of matter paragraph.

Insert Figure 1 about here

Panel A of Table 2 provides descriptive statistics of the attention to the audit report as a whole and the attention to its different subparts. *EntireAuditReportAttention* is defined as total fixation time spent on reading the audit report divided by audit report's total length (number of characters).[16] The time used for reading the first three 'standard' paragraphs of the audit report is presented separately as *Paragraph 1, 2,* and *3*, and as a composite measure of these three labeled as *Par1-3Attention*. *OpinionAttention* is the time used for reading the opinion part of the audit report (including the review of management in the Danish versions), while *GCAttention* is the attention to the going-concern paragraph. *OpinionGCAttention* includes both the attention to the opinion and attention to the going-concern paragraph. Finally, *AuditorAttention* is time used for

[15] Each example represents a participant whose overall attention to the audit report is closest to the respective group's median.

[16] Due to presence/omission of GC paragraph, Review of management paragraphs and different auditor and audit firm names (because of the manipulations and Danish/Finnish cases), total lengths of the audit reports varied from 3 062 to 4 097 characters.

reading auditor name, signature and audit firm logos. Each variable is divided by the total length in characters of the paragraph in question.

Table 2 shows that the going-concern paragraph gets the most attention, with mean (median) 50.3 (36.7) ms per character. When combining the going-concern paragraph and the opinion paragraph, mean (median) is 27.3 (23.7). Mean (median) *AuditorAttention* is 9.9 (5.3), while *Par1-3* is 9.7 (5.9). In sum, these descriptive statistics indicate that lenders pay most attention to the auditor's opinion and the emphasis of matter paragraph, and the auditor and the standard paragraphs get the least attention.

Insert Table 2 about here

We investigate the association between going-concern modification and audit firm size, and the attention to the audit report using the following model:

$$Log\ of\ EntireAuditReport/OpinionGC/AuditorAttention = \alpha + \beta_1 CleanNonBig4 + \beta_2 GCnonBig4 + \beta_3 CleanBig4 + \beta_4 Experience + \beta_5 ReadSpeed + \varepsilon, \quad (2)$$

where the dependent variable of audit report attention are as defined above, but with log-transformations. Our independent variables of interest are as defined in section 4.1. Based on prior findings on individuals' information search, we include two control variables in the models. *Experience* is a control for participants' potential knowledge differences of the task-relevant information and information search strategies that might have effect on search behavior (Bonner 2008, 125) (see the definition in section 4.1.). *ReadSpeed* is a control for participants' individual reading style

(Zimbelman 1997; Sirois et al. 2017), captured by the total fixation duration for reading the instruction text paragraph on the information menu page[17]. Panel B of Table 2 indicates that 43 percent of the participants have at least ten years of experience. Mean (median) *ReadSpeed* is 9.2 (8.7) seconds.

Panel C of Table 2 reports the regression results of estimating Model (2), where a case of GC modification signed by Big 4 auditor is the reference case. The first column of Panel C indicates that when the audit report is clean (either *CleanNonBig4* or CleanBig4), lenders pay significantly less attention to the audit report (*Log of EntireAuditReportAttention*). Note that this is not a consequence of the longer report length in cases of modification, since the analysis is time per character. We also find that more experienced lenders pay less attention to the audit report. In column (2), the coefficients of the variables of interest are significantly negative, indicating that *Log of OpinionGCAttention* gets most attention when the case is GC opinion signed by Big 4 compared to all other cases. The variables for clean audit reports are statistically significantly (at 0.01 level) negative, as could be expected. However, a modified audit report signed by a non-Big 4 auditor gets also significantly (at the 0.05 level) less attention. In column (3), the results indicate that the auditor name is not affected by the variables of interest.

Attention directing effect of the going-concern opinion

In order to examine the attention-directing role of the audit report, we start by investigating the link between the content of the going-concern modification and the loan officers' information

[17] To make sure that the effects of experimental manipulations were not affecting this measure, this particular paragraph was chosen because it preceded audit report. For the two participants who did not read this paragraph, before accessing the audit report, median value of the observed *ReadSpeed* was set as their reading speed.

search behavior. "Restructuring and financial arrangements" in the annual report is the most obvious cue, since it is explicitly mentioned in the going-concern modification. Thus, it can be assumed that after seeing the going-concern modification, a participant would be interested in acquiring more information about restructuring in order to investigate the severity of the problem. In order to examine the attention directing effect of the audit report on lenders' information search related to restructuring and financial arrangements, we estimate the following model:

$$Restruct = \alpha + \beta_1 GCBig4 + \beta_2 GCnonBig4 + \beta_3 Experience + \beta_4 ReadSpeed + \varepsilon, \quad (3)$$

where *Restruct* is either *Time_to_Restruct* which measures how rapidly the restructuring-related cue is accessed, or *Used_Time_Restruct* to measure how much time is spent reading the restructuring-related cue. *Time_to_Restruct* is calculated as time to access "Restructuring and financial arrangements" cue after reading the audit report, and *Used_Time_Restruct* is calculated as total fixation duration to "Restructuring and financial arrangements" cue when the lender access the cue the first time.

The variables of interest included in the analysis are *GCBig4*, and *GCnonBig4* (as defined in section 4.1.). All "clean audit report" observations regardless of the Big4 status are in the control group, since the purpose of this analysis is to examine the attention-directing role of the going-concern paragraph. Also, *Experience* and *ReadSpeed* are as previously defined.

Panel A of Table 3 presents the descriptive statistics of the dependent variables. The mean (median) *Time_to_Restruct* is approximately 320 (196) seconds, and *Used_Time_Restruct* 23.5 (26.0) seconds. The robust regression results presented in the column (1) of Panel B indicate that

lenders who read the going-concern modification access the "Restructuring and financial arrangements" cue more rapidly than those who read the clean audit report, but only when the audit report is signed by Big 4 auditor (*GCBig4*) (significant at the 0.05 level). The results in column (2) show that our variables of interest do not have an impact on *Used_Time_Restruct*. However, based on the results of *Time_to_Restruct*, we conclude that the going-concern modification does have attention directing effect when the Big 4 auditor signed the audit report. This implies that lenders do consider Big 4 auditor signed audit reports as somewhat more credible information sources than audit reports signed by a non-Big 4 auditor.

Insert Table 3 about here

Overall information search

We explore the lenders' overall information search, and whether the content of the audit report and the perceived credibility of its source lead to differences in the acquisition of specific information. We first categorize the information into financial and non-financial information. Financial information consists of the time spent on reading financial statement information (including notes) and financial ratios. Non-financial information consists of the time spent on reading information of management views about the current situation (what has happened during the fiscal year), and future prospects. Then, we categorize the information further based on the type of the information content. By applying eye-movement analyses, we calculate times that participants spend on reading a specific information, that is, the total fixation duration in the area of interest indicated.

Regarding financials, we separately consider 1) loans, 2) working capital, 3) income statement and financial ratios, and 4) fixed assets. First, we focus on loans since all the participants of

the experiment were given the same background information on how the case company is seeking to refinance an expiring loan in order to continue operations. In addition, the audit reports with the going-concern modification both explicitly and implicitly refer to the problems related to restructuring and financial arrangements of the case company. Thus, the information concerning loans is considered as task-relevant information. The variable *Loans* captures total fixation duration on 'Non-Current and Current Loans' of the balance sheet and their notes, and 'Withdrawals and Repayments of loans' of the cash flow statement. Second, working capital could be expected to draw lenders' attention as working capital management is important to company liquidity and profitability. The case company's financials related to working capital show important information about how the current fiscal year's improvements in operating cash flow mainly stem from the increase in payables, which is alarming for the company's future liquidity and profitability that are already weak. The variable *WorkingCapital* captures total fixation duration on 'Current assets' and 'Current liabilities' of the balance sheet and their notes, and 'Changes in working capital' of the cash flow statement.

Third, the information of the income statement together with financial ratios provides important information about the company's revenues, income and expenses, as well as the key ratios indicating financial viability. The variable *IncomeRatios* captures total fixation duration on 'Income statement' and its notes, and 'Financial ratios'. Fourth, especially when a company is in financial distress, lenders could be expected focus more on the value of fixed assets, their proportion, and distribution to tangible and intangible assets. The variable *FixedAssets* captures total fixation duration in 'Tangible assets' and 'Intangible assets' of balance sheet and their notes, and 'Investments in tangible and intangible assets' of cash flow statement. Finally, some lenders might focus their attention on management's discussion about the current status or future prospects of

the company. We examine separately the non-financial (NF) cues related to 1) loans (*NF_Loans)*, 2) current situation (*NF_Current*), and 3) future prospects (*NF_Future*).

All the variables are constructed both for the beginning of the information search (based on ten first cues accessed after reading the audit report) and for the entire information search. Moreover, each variable has three different versions: 1) *_Time* is calculated as the total fixation time on an area of interest (to measure the overall time spent on reading specific information), 2) *_TimePerCharacter* is calculated as the total fixation time on an area of interest divided by the number of characters in the area of interest (to measure the attention to specific information), and 3) *_TimeToOverallTime* is calculated as the ratio of total fixation time on an area of interest divided by the time spent on reading all the cues.

The model used to examine the association between going-concern modification and audit firm size, and lenders' information search is the following:

$$INFO = \alpha + \beta_1 CleanNonBig4 + \beta_2 GCnonBig4 + \beta_3 CleanBig4 + \beta_4 Experience + \beta_5 ReadSpeed + \varepsilon \quad (4)$$

where *INFO* is either *Loans, WorkingCapital, IncomeRatios, FixedAssets, NF_Loans, NF_Current, or NF_Future*. The independent variables are defined in the previous sections.

We report the results of estimating Model (4) for the beginning of the information search (i.e., the first ten cues accessed) in Table 4:

- loans in Panel A (*square root of Loans_Time, Loans_TimePerCharacter, Loans_TimeToOverallTime*),
- working capital in Panel B (*log of WorkingCapital_Time, log of WorkingCapital_TimePerChar, WorkingCapital_TimeToOverallTime*),

- income statement and ratios in Panel C (*square root of IncomeRatios_Time, square root of IncomeRatios _TimePerChar, IncomeRatios _TimeToOverallTime*), and
- fixed assets in Panel D (*log of FixedAssets_Time, square root of FixedAssets_Time-PerChar, FixedAssets_TimeToOverallTime*).

The results from estimating Model (4) indicate that the coefficient on *CleanNonBig4* is positive and marginally significant at the 0.10 level when the dependent variable is the total fixation time on loans-related financial information (*square root of Loans_Time*) or the time per character (*square root of Loans_TimePerCharacter*). Moreover, *CleanNonBig4* is positive and significant at the 0.05 level when the dependent variable is the total fixation time on working capital – related financial information (*log of WorkingCapital_Time*) or the time per character (*log of WorkingCapital_TimePerCharacter*). These results suggest that participants who read a clean audit report signed by a non-Big4 auditor spent significantly more time on reading about loans and working capital than those who read a going concern modification by a Big 4 auditor. None of our variables of interest is significant when the dependent variable is *IncomeRatios*. However, *CleanNonBig4* is again positive and significant at the 0.05 level when the dependent variable is *log of FixedAssets_Time* or and marginally significant at the 0.10 level when the dependent variable is *FixedAssets_TimeToOverallTime*.

Examining separately the different categories of non-financial information does not reveal any statistically significant differences between the cases (not tabulated). Moreover, when estimating Model (4) using the eye fixations during the entire information search (i.e., not just the first ten cues accessed), our variables of interest are statistically non-significant (not tabulated). Thus, overall it seems that the content of the audit report directs the use of financial information in the beginning of the information search. While GC modification guides to the information mentioned

in the audit report (as reported in section 4.2.2.), lenders who have read a clean audit report signed by a non-Big 4 are more inclined to start searching information from the financials (specifically, from loans, working capital and fixed assets). This is not evident among lenders who read the same clean report, but which is signed by Big 4 auditor. However, since no differences can be found between the cases when using the variables for the entire information search, we infer that the effect of the audit report dilutes during the information search as lenders gather more information about the company.

Insert Table 4 about here

Additionally, we provide descriptive graphical evidence of the patterns of the information usage. We present this descriptive evidence for the time used on reading *Loans* (Figure 2), and *Working capital* (Figure 3) in different stages of the lenders' overall information search. The figures presenting information search patterns show the average cumulative time spent in each of the four cases (CleanBig4, CleanNonBig4, GCBig4, GCnonBig4), that is, how the lenders accumulate the information starting from the first cue accessed, and continuing to the end of the search.

This graphical evidence implies that in the beginning of the search, lenders who read the audit report with going-concern modification signed by a Big 4 spend somewhat less time on *Loans* and *Working capital* -related information compared to lenders who read the same going-concern modification signed by a non-Big 4 audit firm. Turning to the lenders who were assigned to clean audit report treatments, it appears that, in the very beginning of the search, those lenders who read the report signed by a non-Big 4 spend the most time on *Loans* and *Working capital* -related information, while lenders who read the same clean report signed by a Big 4 auditor spent somewhat less time on this type of financial information.

Overall, it seems that the content of the audit report directs the use of information in the beginning of the information search, providing support for the differences in reading loans and working capital –related information based on the "rank" of the audit report credibility.

Insert Figures 2 and 3 about here

Additional tests: Final decision

Additionally we test whether our variables of interest have an impact on the final decision of the participants. The decision can be either 'decline' (the participant is not willing to grant the loan), 'partially grant' (the participant grants a loan, but because of the high risk, she/he is not willing to grant the full amount), or 'fully grant'. Accordingly, we construct three dummy variables: *Decline, PartialGrant, FullGrant.*

We examine with logistic regression the association between going-concern modification and audit firm size, and loan granting decisions using the following model:

$$DECISION = \alpha + \beta_1 CleanNonBig4 + \beta_2 GCnonBig4 + \beta_3 CleanBig4 + \beta_4 Experience + \beta_5 Loans\_TimeToOverallTime + \beta_6 WorkingCapital\_TimeToOverallTime + \beta_7 IncomeRatios\_TimeToOverallTime + \beta_8 FixedAssets\_TimeToOverallTime + \varepsilon \quad (5)$$

where *DECISION* is either *Decline, PartialGrant* or *FullGrant.* Other variables are as previously defined. The results presented in Table 5 show that none of our variables of interest have an impact on the decision to decline [column (1)]. However, in column (2), when the dummy variable gets

the value of one for those who partially grant the loan (*PartialGrant*), *CleanNonBig4*, and *Clean-Big4* are negative and significant. Moreover, *GCnonBig4* is marginally significant and negative. That is, lenders who read the going concern modification signed by Big 4 are most likely to partially grant the loan.

When the dependent variable is *FullGrant*, the results indicate that *GCnonBig4* and *Clean-Big4* are significant and positive. This suggests that when the going concern modification is signed by a non-Big4, lenders are more willing to fully grant the loan. In addition, lenders are also more likely to fully grant the loan when they have read a clean report signed by a Big4. *CleanNonBig4* is also positive, but marginally significant.

Moreover, the results of the variables of information acquisition indicate that *Loans_Time-ToOverallTime* is negatively associated with *PartialGrant*, whereas *WorkingCapital_Time-ToOverallTime* is positively associated with *PartialGrant* and negatively associated with *Full-Grant*. These results imply that the more the participant spent on reading about the company's existing loans, the less likely he/she is to partially grant the new loan. Moreover, the more the participant spent on reading about working capital–related information, the less likely he/she is to fully grant the loan, but still more likely to partially grant the loan.

Insert Table 5 about here

CONCLUSIONS

This study examines whether going-concern modification and the perceived quality of the auditor that signs the audit report have an impact on loan officers' information search behavior, when they are deciding whether or not to grant a loan to a financially distressed company. The

findings of this study do provide evidence suggesting that lenders' information search behavior is affected not only by the presence vs. absence of a going-concern modification, but also by the credibility of the source as operationalized in the Big 4 vs. non-Big 4 manipulation.

Overall, our findings contribute to the prior literature by suggesting that the credibility of the audit report affects financial statements users' reactions during their decision-making process. It appears that in the presence of financially distressed company, a going-concern modification in the audit report causes lenders to change their subsequent decision-making behavior, but only when the perceived credibility of the audit report source is high. Future research could examine this issue further, for instance, by analyzing the information search patterns after lenders have read a GC modification that reveals surprising new information (e.g. specific asset impairment), which would be subsequently related to another specific cue(s). The nature of the direction provided in the GC modification might lead to notably different information search patterns between users. Also, a larger set of information available about decision-making (e.g. more "soft" and hard data) could reveal more differences in information search patterns, since participants would more likely terminate their information acquisition without reading all available information (e.g. Pennigton and Kelton 2016).

We acknowledge some limitations. Firstly, because the data had to be collected with one-by-one experimental sessions, only a small sample size was achieved. However, statistically significant results found with small sample size generally suggests large effect size (Keppel 2004, 169), encouraging more research on the topic. Secondly, all the participants worked in large international banks. Lenders working in smaller banks could perceive the quality of auditors differently as they are likely to read more audit reports signed by smaller audit firms. Finally, the experiment procedure where participants read an audit report as a first cue constrains their natural information

acquisition order, and therefore may results in unusual search behavior (Hoffman, Joe and Moser 2003). Thus, the results of this study needs to be interpreted in the light of relative terms (of experimental groups), and not in absolute sense.

REFERENCES

Alexander, R. M. 2003. The effects of source credibility on tax professional judgment in consulting engagements. *Journal of the American Taxation Association* 25(s-1): 33-49.

Bamber, E. M., and R. A. Stratton. 1997. The information content of the uncertainty-modified audit report: Evidence from bank loan officers. *Accounting Horizons* 11: 1-11.

Berger, A.N., and G. F. Udell. 2006. A more complete conceptual framework for SME finance. *Journal of Banking & Finance* 30: 2945–2966.

Bessell, M., A. Anandarajan, and A. Umar. 2003. Information content, audit reports and going-concern: An Australian study. *Accounting & Finance 43*(3): 261-282.

Birnbaum, M. H., and S. E. Stegner. 1979. Source credibility in social judgment: Bias, expertise, and the judge's point of view. *Journal of Personality and Social Psychology* 37(1): 48-74.

Birnberg, J. G., and M. D. Shields. 1984. The role of attention and memory in accounting decisions. *Accounting, Organizations and Society* 9: 365–382.

Blay, A. D., K. Kadous, and K. Sawers. 2012. The impact of risk and affect on information search efficiency. *Organizational Behavior and Human Decision Processes* 117(1): 80-87.

Bonner, S. E. 2008. *Judgment and decision making in accounting*. Prentice Hall.

Bruns, V., and M. Fletcher. 2008. Banks´ risk assessment of Swedish SMEs. *Venture Capital*10(2): 171–194.

Cano, M., S. Sánchez Alegría, and P. A. Torres. 2008. Do banks value audit reports or auditor reputation? Evidence from private Spanish firms. *Working paper*.

Carson, E., N. L. Fargher, M. A. Geiger, C. S. Lennox, K. Raghunandan, and M. Willekens. 2013. Audit reporting for going-concern uncertainty: A research synthesis. *Auditing: A Journal of Practice & Theory* 32: 353-384.

Chen, Yasheng, J. Jermias, and T. Panggabean. 2016. The role of visual attention in the managerial judgment of balanced-scorecard performance evaluation: Insights from using an eye-tracking device. *Journal of Accounting Research* 54(1): 113-146.

DeAngelo, L.E. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3: 183–199.

Eshleman, J. D., and P. Guo. 2014. Do big 4 auditors provide higher audit quality after controlling for the endogenous choice of auditor? *Auditing: A Journal of Practice & Theory* 33(4): 197-219.

Firth, M. 1980. A note on the impact of audit qualifications on lending and credit decisions. *Journal of Banking & Finance* 4(3): 257-267.

Fiske, S. T. 1980. Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology* 38: 889–906.

Ford, K. J., N. Schmitt, S. L. Schechtman, B. M. Hults, and M. L. Doherty. 1989. Process tracing methods: contributions, problems, and neglected research questions. *Organizational Behavior and Human Decision Processes* 43: 1, 75–117.

Fortin, S., and J. A. Pittman. 2007. The role of auditor choice in debt pricing in private firms. *Contemporary Accounting Research* 24(3): 859-896.

Francis, J. R., E. L. Maydew, and C. Sparks. 1999. The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice & Theory* 18(2): 17–34.

Francis, J. R. 2004. What do we know about audit quality? *The British Accounting Review* 36: 345-368.

Guiral-Contreras, A., E. Ruiz, and H. J. Choi. 2014. Audit report information content and the provision of non-audit services: Evidence from Spanish lending decisions. *Journal of International Accounting, Auditing and Taxation* 23: 44-57.

Gul, F. A. 1987. The effects of uncertainty reporting on lending officers' perceptions of risk and additional information required. *Abacus* 23(2): 172-179.

Hirst, D. E. 1994. Auditors' sensitivity to source reliability. *Journal of Accounting Research* 32(1):113-126.

Hoffman, V. B., J. R. Joe, and D. V. Moser. 2003. The effect of constrained processing on auditors' judgments. *Accounting, Organizations and Society* 28: 7/8, 699–714.

Holder-Webb, L., and D. S. Sharma. 2010. The effect of governance on credit decisions and perceptions of reporting reliability. *Behavioral Research in Accounting* 22(1): 1–20.

Huber, P. J. 1973. Robust regression: asymptotics, conjectures and Monte Carlo. *The Annals of Statistics* 5(1): 799-821.

International Auditing and Assurance Standards Board (IAASB) 2015a. *International standard on auditing (ISA) 701 (new), communicating key audit matters in the independent auditor's report*. New York: International Federation of Accountants.

International Auditing and Assurance Standards Board (IAASB) 2015b. *At a glance: New and revised auditor reporting standards and related conforming amendments*. New York: International Federation of Accountants.

Just, M. A., and P. A. Carpenter. 1980. A theory of reading: From eye fixations to comprehension. *Psychological Review* 87(4): 329-354.

Karjalainen, J. 2011. Audit quality and cost of debt capital for private firms: Evidence from Finland. *International Journal of Auditing* 15(1): 88-108.

Keppel, G., and Wickens, T. D. 2004. *Design and analysis: A researcher's handbook. 4th ed. Upper Saddle River (NJ): Pearson Prentice Hall.*

Kim, J., D. A. Simunic, M. T. Stein, and C. H. Yi. 2011. Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research* 28(2): 585-615.

King, R. R., S. M. Davis, and N. Mintchik. 2012. Mandatory disclosure of the engagement partner's identity: Potential benefits and unintended consequences. *Accounting Horizons* 26(3): 533-561.

LaSalle, R. E., and A. Anandarajan. 1997. Bank loan officers' reactions to audit reports issued to entities with litigation and going concern uncertainties. *Accounting Horizons* 11(2): 33–40.

Lennox, C. S. 1999. Audit quality and auditor size: An evaluation of reputation and deep pockets hypotheses. *Journal of Business Finance & Accounting* 26(7-8): 779-805.

Maines, L. A., and L. S. McDaniel. 2000. Effects of comprehensive-income characteristics on nonprofessional investors' judgments: The role of financial-statement presentation format. *The Accounting Review* 75(2): 179-207.

Mason, C., and M. Stark. 2004. What do investors look for in a business plan? *International Small Business Journal* 22(3): 227–248.

McKinley, S., K. Pany, and P. M. Reckers. 1985. An examination of the influence of CPA firm type, size, and MAS provision on loan officer decisions and perceptions. *Journal of Accounting Research* 23(2): 887-896.

Miller, J. R., and L. M. Smith. 2002. The effects of the level of assurance, accounting firm, capital structure, and bank size on bank lending decisions. *Journal of Accounting, Auditing & Finance* 17(1): 51-71.

Nilsson, A. and P. Öhman. 2012. Better safe than sorry: defensive loan assessment behaviour in a changing bank environment. *Qualitative Research in Accounting & Management* 9(2): 146–167.

Pennington, R. R., and A. S. Kelton. 2016. How much is enough? An investigation of nonprofessional investors information search and stopping rule use. *International Journal of Accounting Information Systems* 21, 47-62.

Petty, R. E., and J. T. Cacioppo. 1986. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York, NY: Springer-Verlag.

Petty, R. E. and D. T. Wegener. 1999. The elaboration likelihood model: current status and controversies. In: *Dual process theories in social psychology.* Chaiken S. & Trope Y. (Eds.), 41-72. New York, NY: Guilford Press.

Pornpitakpan, C. 2004. The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of Applied Social Psychology* 34(2): 243-281.

Rosner, R. 2003. Earnings manipulation in failing firms. *Contemporary Accounting Research* 20(2): 361-408.

Sirois, L., J. Bédard, and P. Bera. 2017. The informational value of key audit matters in the auditor's report: Evidence from an eye-tracking study. *Working paper.*

Sormunen, N. 2014. Bank officers' perceptions and uses of qualified audit reports. *Qualitative Research in Accounting & Management* 11(3): 215-237.

Teoh, S. H., and T. J. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68(2): 346–366.

Zimbelman, M. F. 1997. The effects of SAS No. 82 on auditors' attention to fraud risk factors and audit planning decisions. *Journal of Accounting Research* 35 (Supplement): 75-97.

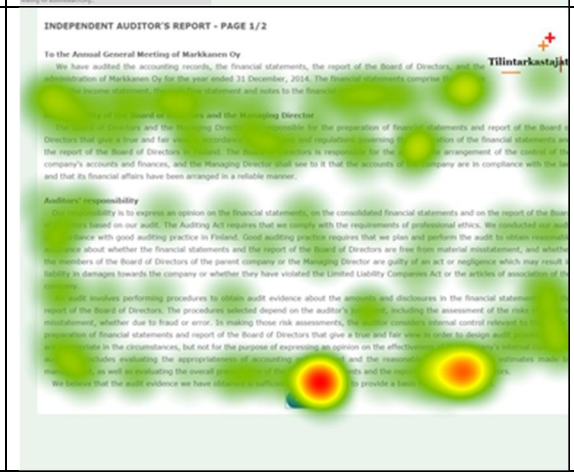
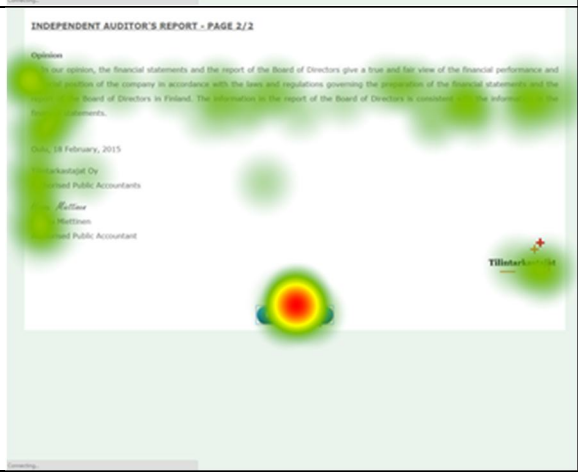
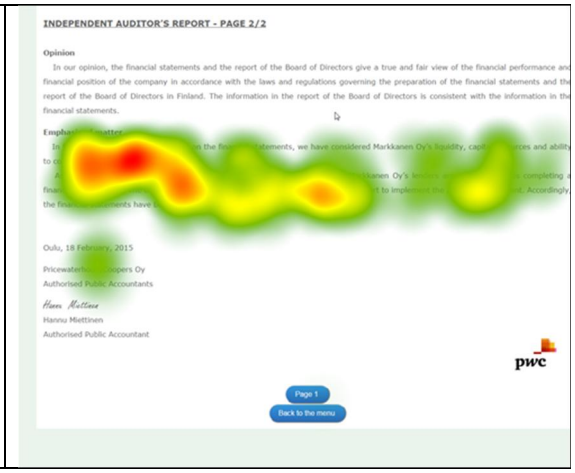
APPENDIX 1

Variable definitions

AuditorAttention	Total fixation time used for reading auditor name, signature and audit firm logos divided by number of their characters.
CleanBig4	Experimental group: Clean audit report signed by Big 4 auditor.
CleanNonBig4	Experimental group: Clean audit report signed by a non-Big 4 auditor.
Confidence_sum	Sum of the values of the six ordinal variables based on the questions: "I am confident that company's financial statements are free from material misstatement, whether due to fraud or error:" 1; no confidence to 6; complete confidence]; "I am confident that the level of assurance provided by the audit of company's financial statements is high" [1; no confidence to 6; complete confidence]; "I am confident that auditor work is entirely adequate:" [1; no confidence to 6; complete confidence]; "I am confident that the amounts and disclosures in the audited financial statements are entirely credible" [1; no confidence to 6; complete confidence]; "On this scale, choose the number corresponding to your opinion of whether the audit report adds value to financial statements" [1; Definitely does not add value to 6; Definitely adds value]; "On this scale, choose the number corresponding to your opinion of whether company's financial statements are in accordance with private entity financial accounting standards (FAS)" [1; Definitely not in accordance to 6; Definitely in accordance]
Decline	A dummy variable with a value of one if the participant is not willing to grant the loan at all, and zero otherwise.
EntireAuditReportAttention	Total fixation time spent on reading the audit report divided by number of its characters.
Experience	A dummy variable set to one if the participant has at least ten years of experience in commercial bank lending, and zero otherwise.
FixedAssets	Consists following area of interests: 'Tangible assets' and 'Intangible assets' of balance sheet and their notes, and 'Investments in tangible and intangible assets' of cash flow statement.
FixedAssets_TimeToOverallTime	Total fixation time spent on *FixedAssets* divided by the time spent on reading all the cues (ratio).
FullGrant	A dummy variable with a value of one if the participant granted the loan fully, and zero otherwise.
GCAttention	Total fixation time used to the going-concern paragraph divided by number of its characters.
GCBig4	Experimental group: Audit report with GC paragraph signed by Big 4 auditor.
GCnonBig4	Experimental group: Audit report with GC paragraph signed by non-Big 4 auditor.
IncomeRatios	Consists following area of interests: 'Income statement' and its notes, and 'Financial ratios'.
IncomeRatios_TimeToOverallTime	Total fixation time spent on *IncomeRatios* divided by the time spent on reading all the cues (ratio).
Loans	Consists following area of interests: 'Non-Current and Current Loans' of the balance sheet and their notes, and 'Withdrawals and Repayments of loans' of the cash flow statement.
Loans_TimeToOverallTime	Total fixation time spent on *Loans* divided by the time spent on reading all the cues (ratio).
Log of AuditorAttention	The natural logarithm of the total fixation time used for reading auditor name, signature and audit firm logos divided by number of their characters.

Log of EntireAuditReportAttention	The natural logarithm of the total fixation time spent on reading the audit report divided by number of its characters.
Log of FixedAssets_Time	The natural logarithm of the total fixation time spent on *FixedAssets*.
Log of FixedAssets_TimePer Character	The natural logarithm of the total fixation time spent on *FixedAssets* divided by the number of characters in area of interests.
Log of OpinionGCAttention	The natural logarithm of the total fixation times used to the opinion and to the going-concern divided by number of their characters.
Log of WorkingCapital_Time	The natural logarithm of the total fixation time spent on *WorkingCapital*.
Log of WorkingCapital_TimePerCharacter	The natural logarithm of the total fixation time spent on *WorkingCapital* divided by the number of characters in area of interests.
OpinionAttention	Total fixation time spent on reading the opinion paragraph divided by number of its characters (including the review of management in the Danish versions).
OpinionGCAttention	Total fixation times used to the opinion and to the going-concern divided by number of their characters.
Par1-3Attention	The sum of total fixation times spent on Paragraph 1, 2, and 3 divided by number of their characters.
Paragraph 1, 2, and 3	Total fixation times spent on reading the audit report's paragraphs 1, 2, and 3 divided by number of its characters, respectively.
PartialGrant	A dummy variable with a value of one if the participant granted the loan with partial amount, and zero otherwise.
ReadSpeed	Total fixation time spent on reading the instruction text paragraph divided by number of its characters.
Sqrt. of IncomeRatios_Time	Square root of the total fixation time spent on *IncomeRatios*.
Sqrt. Of IncomeRatios_TimePerCharacter	Square root of the total fixation time spent on *IncomeRatios* divided by the number of characters in area of interests.
Sqrt. of Loans_Time	Square root of the total fixation time spent on *Loans*.
Sqrt. Of Loans_TimePerCharacter	Square root of the total fixation time spent on *Loans* divided by the number of characters area of interests.
Time_to_Restruct	The time to access "Restructuring and financial arrangements" cue after reading the audit report.
Used_Time_Restruct	Total fixation time spent on "Restructuring and financial arrangements" cue when the participant access the cue the first time.
WorkingCapital	Consists following area of interests: 'Current assets' and 'Current liabilities' of the balance sheet and their notes, and 'Changes in working capital' of the cash flow statement.
WorkingCapital_TimeToOverallTime	Total fixation time spent on *WorkingCapital* divided by the time spent on reading all the cues (ratio).

Figure 1. Heatmaps showing fixation time on the audit report by case

Clean Big 4		
Clean Non-Big 4		
GC Big 4		

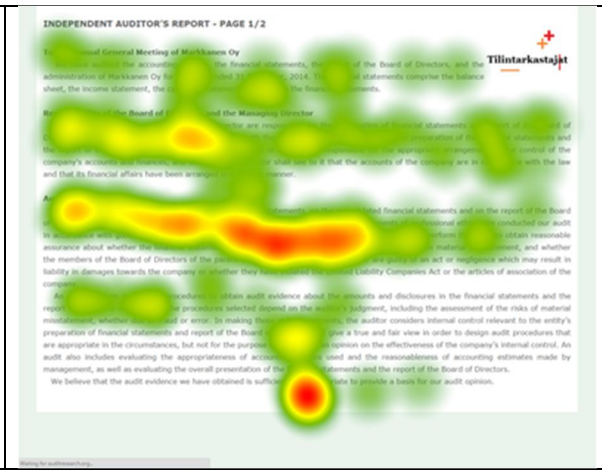
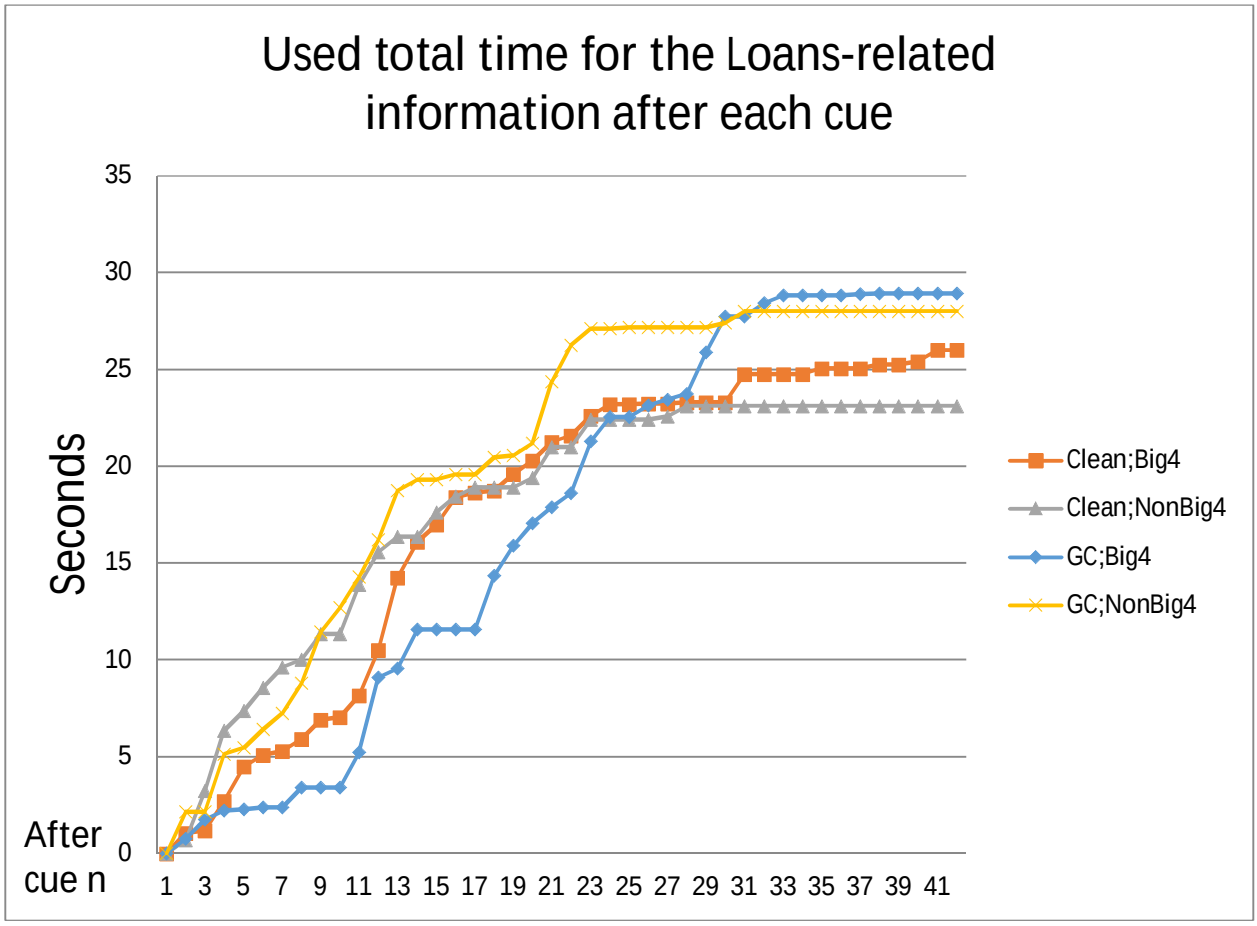
GC Non-Big 4	 INDEPENDENT AUDITOR'S REPORT - PAGE 1/2 Tilintarkastajat	 INDEPENDENT AUDITOR'S REPORT - PAGE 2/2 Oulu, 18 February, 2015 Tilintarkastajat Oy Authorised Public Accountants Hannu Miettinen Authorised Public Accountant Tilintarkastajat

Figure 2. Information search patterns of the Loans-related financial information



Notes: This graph presents cumulative total time used for loans-related information at the each stage of the information search by the four treatment groups. For instance, after seven opened cues the participants of the group *GC;Big4* (*Clean;NonBig4*) have used on average 2.37 (9.61) seconds for reading this information.

Figure 3. Information search patterns of the Working Capital related information

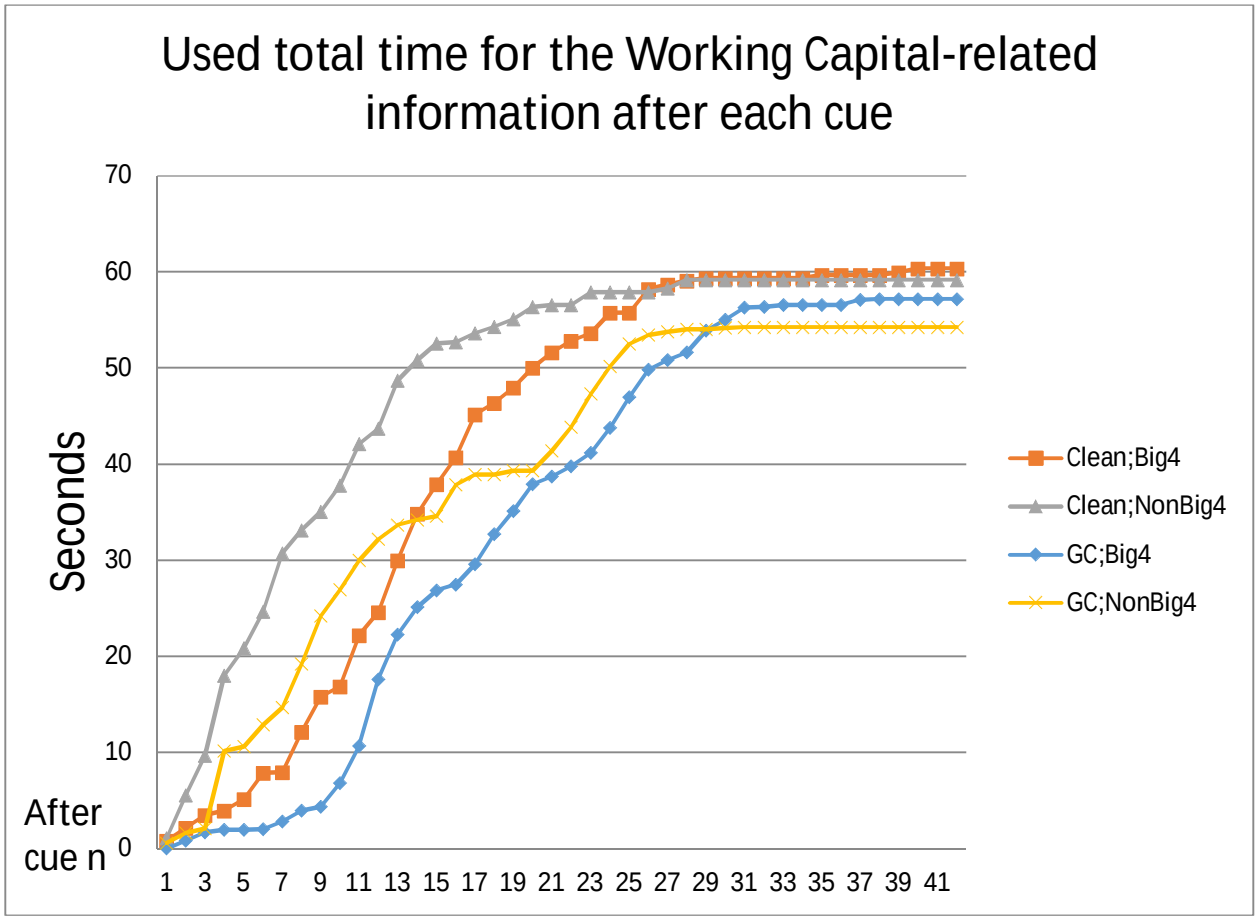


TABLE 1

Analysis of the participants' confidence in the audit and the financial statements of the case company

	Model (1)	
	Coef.	t-value
CleanNonBig4	-7.974	-3.88***
GCnonBig4	-3.604	-1.68*
CleanBig4	0.374	0.19
Experience	0.326	0.47
Intercept	29.909	12.86***
Adjusted R^2	0.35	
F-statistics	5.51***	

Notes: See Appendix 1 for the variable definitions. All p-values are two tailed. *, ** and *** denote

p<.05, p<.01 and p<.001, respectively.

TABLE 2

Panel A: Descriptive statistics for time spent on the audit report and its separate parts.

Part of report	N	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
EntireAuditReportAttention	35	13.450	12.255	0.860	5.659	10.635	16.150	61.800
Paragraph 1	35	17.507	17.448	0	6.317	14.364	20.854	87.451
Paragraph 2	35	9.875	10.722	0	3.119	5.213	14.520	46.497
Paragraph 3	35	8.330	12.235	0.169	2.212	4.293	6.645	52.005
Par1-3Attention	35	9.726	11.094	0.630	2.939	5.940	9.606	46.408
OpinionAttention	35	19.086	12.662	1.675	10.241	17.502	23.650	63.934
GCAttention	17	50.321	41.943	7.688	24.640	36.723	60.376	177.173
OpinionGCAttention	35	27.259	22.574	1.675	13.816	23.650	33.973	125.680
AuditorAttention	35	9.862	9.865	0.000	3.125	5.340	14.379	39.313

Panel B: Descriptive statistics of control variables.

Variable	N	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
ReadSpeed	35	9.166	5.874	0.516	4.533	8.694	11.793	27.409
Experience (dummy)	35	0.429	0.502	0	0	0	1	1

Panel C: Analysis of lenders' attention to audit report, Model (2)

	Log of EntireAuditReport Attention		Log of OpinionGC Attention		Log of Auditor Attention	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	-0.640	8.25***	-0.778	7.14***	0.718	1.98
GCnonBig4	-0.180	0.59	-0.695	5.16**	0.490	0.84
CleanBig4	-1.236	32.90***	-1.104	15.33***	0.431	0.76
Experience	-0.725	14.30***	-0.708	7.97***	0.126	0.08
ReadSpeed	0.000	12.36***	0.000	3.46*	0.000	1.13
Intercept	2.459	75.84***	3.668	98.73***	1.195	3.42*
N = 35						

Notes: See Appendix 1 for the variable definitions. All p-values are two tailed. *, ** and *** denote p<.05, p<.01 and p<.001, respectively.

TABLE 3
Analysis of attention directing role of the going-concern opinion

Panel A: Descriptive statistics of the dependent variables

Variable	N	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Time_to_Restruct	35	320.057	269.365	12.000	116.000	196.000	559.000	974.000
Used_Time_Restruct	35	23.497	12.742	0.000	14.222	26.006	33.022	45.774

Panel B: Model (3)

	Time_to_Restruct		Used_time_Restruct	
	Coef.	Chi-sq	Coef.	Chi-sq
GCBig4	-224.432	4.00**	3580.251	0.44
GCnonBig4	-172.231	2.30	169.906	0.00
Experience	70.447	0.39	-4917.500	0.83
ReadSpeed	0.010	1.16	0.742	2.84*
Intercept	254.608	3.82*	17460.600	7.79***

N=35

Notes: See Appendix 1 for the variable definitions. All p-values are two tailed. *, ** and *** denotes p<.05, p<.01 and p<.001, respectively.

TABLE 4
Analysis of attention to specific information, Model 4

Panel A: Loans

	Sqrt. of Loans_Time		Sqrt. Of Loans_TimePer-Character		Loans_TimeToOverallTime	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	1.796	3.34*	2.914	2.85*	0.019	1.63
GCnonBig4	1.406	1.86	2.071	1.31	0.011	0.50
CleanBig4	0.323	0.12	0.339	0.04	0.002	0.02
Experience	-0.621	0.54	-0.323	0.05	-0.017	1.62
ReadSpeed	0.000	0.28	0.000	0.44	0.000	0.00
Intercept	1.719	1.90	2.752	1.58	0.028	2.03

Panel B: Working Capital

	Log of WorkingCap-ital_Time		Log of WorkingCapi-tal_TimePerCharacter		WorkingCapital_TimeToOver-allTime	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	1.416	5.26**	1.377	5.62**	0.032	1.39
GCnonBig4	0.649	1.00	0.579	0.90	0.031	1.18
CleanBig4	0.627	1.10	0.710	1.60	0.002	0.01
Experience	-0.890	2.80*	-0.871	3.03*	-0.029	1.55
ReadSpeed	0.000	0.38	0.000	0.79	0.000	0.00
Intercept	2.213	7.99***	1.981	7.23***	0.057	2.65

Panel C: Income statement and ratios

	Sqrt. of IncomeRa-tios_Time		Sqrt. Of IncomeRa-tios_TimePerCharacter		IncomeRatios_TimeTo OverallTime	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	1.217	2.52	1.196	1.82	0.022	0.42
GCnonBig4	0.141	0.03	0.656	0.50	-0.004	0.01
CleanBig4	1.173	2.50	0.861	1.01	0.010	0.10
Experience	0.073	0.01	-0.412	0.29	-0.035	1.37
ReadSpeed	0.000	10.31***	0.000	3.09*	0.000	0.17
Intercept	2.936	9.13***	2.517	5.01**	0.099	5.12**

Panel D: Fixed assets

	Log of FixedAssets_Time		Log of FixedAssets_TimePer Character		FixedAssets_TimeTo OverallTime	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	1.009	4.03**	0.253	1.14	0.018	3.11*
GCnonBig4	0.042	0.01	0.280	1.27	-0.007	0.40
CleanBig4	0.070	0.02	0.165	0.51	-0.003	0.11
Experience	-0.937	4.69**	-0.559	7.48***	-0.005	0.29
ReadSpeed	0.000	0.75	0.000	1.60	0.000	6.48**
Intercept	2.019	10.04***	2.710	81.30***	0.013	0.97

Notes: See Appendix 1 for the variable definitions. All p-values are two tailed. *, ** and *** denotes p<.05, p<.01 and p<.001, respectively.

TABLE 5

Analysis of final decisions of loan granting

	Model (5)					
	Decline		PartialGrant		FullGrant	
	Coef.	Chi-sq	Coef.	Chi-sq	Coef.	Chi-sq
CleanNonBig4	1.276	1.02	-4.701	5.14**	3.314	3.74*
GCnonBig4	-0.571	0.12	-3.472	3.61*	4.761	4.59**
CleanBig4	1.430	1.09	-5.778	6.86***	4.410	4.74**
Experience	0.626	0.34	-2.325	2.49	1.879	1.62
Loans_TimeToOverallTime	54.377	2.40	-105.800	4.13**	37.046	0.88
WorkingCapital_TimeToOverallTime	-9.769	0.46	66.794	5.59**	-62.544	4.58**
IncomeRatios_TimeToOverallTime	3.525	0.11	-2.117	0.04	-4.272	0.14
FixedAssets_TimeToOverallTime	-1.004	0.00	-17.135	0.86	20.075	1.23
Intercept	-3.642	2.23	3.375	1.90	-2.186	0.83
Likelihood ratio, Chi-sq	5.85		20.76***		18.02**	
R^2	0.15		0.45		0.40	
Declined (10)/Partially granted (13)/Fully granted(12)	35		35		35	

Notes: See Appendix 1 for the variable definitions. All p-values are two tailed. *, ** and *** denotes p<.05, p<.01 and p<.001, respectively.