

The Effect of Audit Firm Specialization on Earnings Management and Quality of Audit Work

Mohamed Hegazy
American University in Cairo

Ahmed Al Sabagh
Cairo University

Rasha Hamdy
Cairo University

This paper aims at investigating the effect of industry specialization on the audit quality and earnings quality. It examines the relation between industry specialization and earnings quality, financial reporting quality, and audit quality. The research posits that industry specialization constrains earnings management. In addition, it hypothesized a positive relationship between industry specialization and financial reporting quality. An experiment was conducted in an audit firm with international affiliation in Egypt to test the research hypotheses. The results indicate that there is no significant difference between industry specialist auditors and non-specialists in constraining earnings management. In addition, findings support that financial reporting quality was significantly higher when specialists conducted the audit. The results provide empirical evidence consistent with the hypothesis that auditor with industry specialization improves audit quality. Finally, industry specialization enables auditors to realize the amendments in auditing standards better than non-specialists.

INTRODUCTION

Specialization has an important role in improving the effectiveness and efficiency in many fields, such as the audit field. There are many factors affecting the audit quality, one of these factors is industry specialization. *Industry specialization* refers to industry-specific knowledge accumulated from serving clients in the same industry (Gul et al., 2009). It allows audit firms to enhance efficiency, create barriers to entry, and improve audit quality (Solomon et al., 1999). In the aftermath of accounting and audit scandals such as Enron and WorldCom, regulators and audit professionals have been seeking to regain the confidence of financial statements' users. In addition, audit quality has never been more important following the collapse of Enron in 2001 and the resulting turmoil in auditing profession (Moroney and Carey, 2007). Also, many events in auditing environment led to the importance of audit quality such as increasing the legal litigation against auditors. Moreover, the role of auditing in ensuring the quality of corporate earnings has come under considerable scrutiny because of recent earnings restatements (Krishnan, 2003).

The demand for auditing in capital markets can be analyzed from three perspectives (i.e., a monitoring role, an information role and an insurance role) (Wallace, 1981). How the auditor fulfils these roles determines the level of audit quality (Fernando et al., 2010). Audit quality is an important market performance measure in the market for audit services. The extent of industry-based experience may be one determinant of audit quality (Gramling and Stone, 2001). So, it is necessary to study the role of industry specialization in improving audit quality to help the audit firms in applying industry specialization strategy.

In addition, there is a growing emphasis in worldwide professional auditing standards on understanding the client's industry and business. For example, audit quality control standards in the U.S. (American Institute of Certified Public Accountants (AICPA), 1993) emphasized the importance of identifying, designating, and developing industry specialist auditor (Gramling and Stone, 2001). The accounting and auditing literature focused on the specialization in the audit field and its impact on some proxies such as audit quality, earnings management, and financial reporting quality. The main direction in the literature confirms the importance of industry specialization in enhancing auditor performance and improving audit quality. In the last few years, many audit firms were directed towards reengineering their activities in audit field based on the industry specialization to provide more effective audit services and increase the confidence in the auditors' performance that results in audit quality. In other words, audit firms develop industry specialization in order to accomplish multiple objectives. For example, audit industry specialization helps firms to increase the demand for audit or non- audit services within the focal industry (Gramling and Stone, 2001:3). Also, audit industry specialization potentially improves firm efficiency through economies of scale resulting from concentrating resources and technology investments in focal industries (Hogan and Jeter, 1999). In addition, it creates barriers to entry for competitors.

Prior research has generally considered an audit firm as an industry specialized firm if it audited more than 10% of firms or sales in an industry (DeFond, 1992; Craswell et al., 1995 and Robkob et al., 2011). The auditor's industry specialization implies extensive knowledge of the client's business environment, its industry accounting practices and potential illegitimate accounting practices (Fernando et al., 2010). Also, Casterella et al. (2004) described auditor industry specialization as "*A differentiation strategy whose purpose is to provide auditors with a sustainable competitive advantage over non specialists*".

Industry specialization, within the market for audit services, is likely to affect market performance including audit fees and audit quality. Prior literature that investigated the effect of audit firm industry specialization on earnings and audit qualities did not provide sufficient evidence yet to support this relation empirically. Therefore, this study is among the first to link the audit industry specialization to earnings quality and audit quality in Egypt. Also, it extends this line of literature by empirically comparing the performance of industry specialist auditors to non-specialists. This paper contributes to academics and practitioners in the following ways. First, it extends a stream of research on the relation between audit firm industry specialization and earnings quality. Second, it assesses the effect of industry specialization on the quality of financial reporting. Third, based on the positive relation between the earnings quality and audit quality, the research investigates the relation between the industry specialization and audit quality empirically using an experiment in actual audit situation. This research contributes to the limited prior studies in this area of research using experiments. This is considered a significant contribution especially in developing countries where confidentiality and Arab culture restrict the undertaken of experimental studies in the accounting and auditing literature.

The study's findings suggest that industry specialist auditors do not outperform non-specialists in constraining earnings management. In addition, the results support the positive relationship between industry specialization and financial reporting quality. Moreover, the empirical findings evidenced that industry specialization improves audit quality. Also, the performance of specialists is superlative compared to non-specialists. These results help regulators and the management of audit firms by providing evidence to support the effect of industry specialization on the ability of auditors to comprehend any developments in the audit environment. Finally, the results provide ample evidence on the influence of audit specialization on audit outcomes.

The remainder of this paper is organized as follows. The first section discusses prior studies concerning the relationship between industry specialization and audit quality, financial reporting quality, and earnings management. The second section presents the hypotheses developed for assessment and testing. The third section addresses the data collection, sample selection and the design of the experiment. The fourth section describes the empirical results and discussion. The conclusion and recommendations for future research are presented in the last section.

PRIOR STUDIES AND HYPOTHESES DEVELOPMENT

The common concept of specialization has been approached in several studies, which is, in general, someone who works in a certain field continuously, in a continuous manner, and gains experience more than others in the same industry (e.g., Dunn et al., 2000; Stanley and DeZoort, 2007; Gul et al., 2009; Robkob et al., 2011; Sun and Liu, 2011). For example, Solomon et al. (1999) defined industry specialists as auditors whose training and experience are largely concentrated in a particular industry and they spend most of their time auditing clients in the one industry setting. Another studies defined industry specialization as an increasing function of market share, which may include a share of the industry total assets (e.g., Mayhew and Wilkins, 2003; Dunn and Mayhew, 2004; Francis et al., 2005a). Cahan et al. (2008) expected that the industry's attractiveness for specialization will be directly related to the amount of industry-specific knowledge requirements needed to complete the audit, and that these requirements are likely to vary widely across industries.

Developing an industry specialization is costly since it requires significant investment of resources. From a cost-benefit perspective, such an investment (cost) is justified because audit firms making those investments are expected to provide high quality audits, attract more clients and, ultimately, make profit on their investments (Habib, 2011: 118). The main direction in the literature confirms the importance of industry specialization in maximizing auditor performance and improving audit quality. Prior research explored the importance of industry specialization in audit firms (e.g., Hogan and Jeter, 1999; Mayhew and Wilkins 2003; Dunn and Mayhew 2004) and found that market leaders continued to increase their market share, suggesting that there are returns to investing in specialization. Another study by Low (2004) has important implications for audit effectiveness and efficiency as auditors' knowledge of the client's industry was found to affect not only the auditors' risk assessments, but also the nature, quality, and risk-sensitivity of their planning decisions. Findings of more recent studies are consistent with the theory that auditors specialize in various industries to achieve product differentiation and provide higher quality audits (e.g., Moroney and Carey, 2007; Gul et al., 2009). Dowling and Moroney (2008) stated that industry-specialist auditors outperform non-specialists because they develop "*industry-specific skills and expertise over and above normal auditor expertise*" (Craswell et al., 1995).

A substantial body of audit research suggested that industry specialization affects the auditor performance and judgment. At the same time, recent experimental studies (e.g., Moroney and Carey, 2007; Green, 2008; Grenier, 2010; Sun and Liu, 2011) evidenced the positive effect of industry-based experience on the auditor's judgment quality. Although three dimensions of the audit market are emphasized: market structure, market strategy and market performance (Habib, 2011: 115), this paper chose to focus on the dimension of market performance. The market performance dimension has been considered by investigating the effect of industry specialization on the audit outcomes (audit fees, earnings quality, financial reporting quality, and audit quality).

Industry Specialization and Audit Fees

Industry specialization may lead to more specialized services resulted in higher fees due to a differentiation premium (Verleyen and Beelde, 2011). The literature on the relationship between industry specialization and audit fees is extensive. Zerni (2012) concluded that the audit literature has acknowledged two competing theories that may explain how auditors' specialization affects audit fees. On the one hand, auditor specialization can be viewed as a differentiation strategy that will lead to higher fees if clients value their services. On the other hand, specialization may also create economies of scale,

which arise from servicing many similar clients resulting in lower audit production costs (Zerni, 2012: 320).

Based on the notion that industry specialization affects audit fees, prior studies examined audit pricing by focusing on auditor industry specialization showing a positive effect on this important element (e.g., Chen and Elder, 2001; Mayhew and Wilkins, 2003). However, another study by (Ferguson and Stokes, 2002) found limited support for the presence of industry leadership premiums. A more recent study by Habib (2011) reviewed prior research for the impact of audit firm industry specialization on the audit fees (e.g., Craswell et al., 1995; Casterella et al., 2004; Francis et al., 2005; Fleming and Romanus, 2007) and found mixed findings. More recent studies explored the pricing of auditor industry specialization (e.g., Lowensohn et al., 2007; Cahan et al., 2008; Carson, 2009; Wang et al., 2009; Fung et al., 2012; Scott and Gist, 2013; Fleming et al., 2014) and documented and confirmed the mixed results on the effect of industry specialization on audit fees. But most studies documented fee premium for industry specialist auditors (e.g., Craswell et al., 1995; Francis et al., 2005; Carson, 2009). Also, other studies found that industry specialist auditors drive a fee premium for large clients (e.g., Mayhew and Wilkins, 2003; Carson and Fragher, 2007) and for small clients (e.g., Casterella et al., 2004; Huang et al., 2007). At the same time, contemporaneous research reported a fee premium for industry specialist auditors in countries such as Hong Kong and China (e.g., DeFond et al., 2000; Wang et al., 2009; Srinidhi et al., 2009). In contrast, few studies found that auditor specialization isn't related to audit fees (e.g., Lowensohn et al., 2007). Extending prior literature, Zerni (2012) suggested that having serviced many similar clients in the past may help auditors to develop a specialized knowledge of what these clients do and the challenges and issues they face, thereby creating in-depth knowledge of specific types of clients, leading to higher-quality audits and higher fees. This paper focuses on the effect of industry specialization on earnings quality, financial reporting quality, and audit quality due to the lack of published data on audit fees in many developing countries including Egypt.

Industry Specialization and Earnings Quality

The main factor that may affect the role of industry specialization in enhancing earnings quality is the knowledge and experience of auditors related to client's business. That may differentiate the specialist auditors from non-specialist auditors based on the ability of auditors to gain more knowledge specific to a certain industry. It could be argued that firms with higher earnings quality may hire industry specialists, and thus the observed positive association between earnings quality and industry specialization may be due to self-selection of industry specialist auditors (Gul et al., 2009).

Substantial research investigated the association between the industry specialization and earnings quality (e.g., Gramling et al., 2001; Balsam et al., 2003; Krishnan, 2003; Albring et al., 2004; Dunn and Mayhew, 2004). The overwhelming majority of the literature has focused on earnings quality by examining the effect of industry specialization on constraining earnings management (e.g., Balsam et al., 2003; Krishnan, 2003; Velury, 2003; Kown et al., 2007; Chi et al., 2009; Gul et al., 2009; Mascarenhas et al., 2010; Mitra and Hossain, 2010; Karjalainen, 2011; Burnett et al., 2012; DeBoskey and Jiang, 2012). In addition, Sun and Liu (2013) investigated the interaction effect of auditor industry specialization and board governance on earnings management. The literature provided mixed results. Most of these studies evidenced the effect of auditor industry specialization on the earnings management (e.g., Balsam et al., 2003; Sun and Liu, 2013). Rare studies found little or no significant difference in earnings quality and failed to find evidence that discretionary accruals of firms audited by industry specialist auditors are more value relevant (e.g., Jenkins et al., 2006; Chi et al., 2009; Mascarenhas et al., 2010). Reichelt and Wang (2010) stated that the effect of earnings management on earnings quality can't be directly observed but is instead inferred by researchers from certain statistical properties and characteristics of earnings numbers (Schipper and Vincent, 2003). They examined two widely investigated properties of earnings numbers: abnormal accruals and the likelihood of meeting or beating analysts' earnings forecasts.

Both auditor industry specialization and earnings quality are unobserved; Balsam et al. (2003) used multiple proxies for them. For example, prior work has measured auditors' industry specialization in different ways: market leadership, dominance, and market shares (Balsam et al., 2003). Most auditing

studies used the level of discretionary accruals, arguing that it is "direct" measure of earnings management, which one factor is contributing to earnings quality. These studies investigated the association between discretionary accruals and industry specialization (e.g., Balsam et al., 2003; Velury 2003; Krishnan, 2003; Albring et al. 2004; Jenkins et al., 2006). They found a negative association between discretionary accruals and auditor industry specialization. In addition, recent studies documented a negative association between discretionary accruals and auditor industry specialization, implying that auditor industry specialization is a source for variation in audit quality, whether in publicly-traded companies (e.g., Ittonen et al., 2010) or in privately-held companies (e.g., Karjalainen, 2011).

Others used measures that can reflect differential earnings management and general error generation (intentional or otherwise) such as the earnings response coefficients and the ability of earnings to predict cash flows (Gramling et al., 2001). Following these studies, Balsam et al. (2003) measured earnings quality using two measures, which are discretionary accruals and the earnings response coefficient. First, they argued that an industry specialist should be able to control the level of discretionary accruals generated by the client's accounting system. Second, they examined whether an auditor's industry specialist status is associated with earnings response coefficients, which measures the extent of stock market responsiveness to earnings surprises. In addition, Dowling and Moroney (2008) found some studies supporting the view that the use of an industry-specialist audit firm is associated with higher earnings response coefficients, higher quality voluntary disclosures, lower discretionary accruals, lower levels of fraudulent reporting and higher market valued earnings surprises (e.g., Balsam et al., 2003; Krishnan, 2003; Dunn & Mayhew, 2004; Francis et al., 2005). Moreover, archival studies have examined the relation between industry specialization and measures of earnings quality (Almutairi et al., 2009). Relative to clients of non-specialist auditors, clients of specialists have significantly lower absolute discretionary accruals (Krishnan, 2003), and larger earnings response coefficients (Balsam et al., 2003).

Also, researchers have argued that higher audit quality can reduce the perceived uncertainty and noise in reported earnings resulting in higher earnings response coefficients. Prior literature found evidence that clients of industry specialists have a lower level of discretionary accruals compared with non-specialists. This finding suggested that industry specialist auditors constrain the use of discretionary accruals (Cahan et al., 2008). Also, several studies supported that industry specialist auditors provide higher earnings quality than non-specialists, where the results of studies that use proxies for audit quality other than audit fees are more consistent (Schauer, 2002). More recently, the audit research examined the association between industry specialization and the quality of earnings and documented positive association between industry specialization and earnings quality (e.g., Karjalainen, 2011; DeBoskey and Jiang, 2012).

To conclude, contemporaneous literature investigated the impact of industry specialization on earnings quality through examining the role of industry specialist auditors in constraining earnings management (e.g., Balsam et al., 2003; Krishnan 2003; Zhou and Elder, 2004; Mascarenhas et al., 2010; Sun and Liu, 2013). Researchers used one or more of audit quality measures (i.e., discretionary accruals, propensity to meet or beat analysts' forecasts, going concern opinion, and earnings response coefficient) as a proxy for earnings quality. This literature was heterogeneous and provided mixed findings. On one side, prior literature found that hiring industry specialist auditors decreases discretionary accruals while it increases earnings response coefficients (e.g., Balsam et al., 2003; Krishnan, 2003). That means auditor industry specialization is negatively associated with earnings management but positively with earnings quality. Also, audit industry specialization allows auditors to constrain fraud and earnings manipulation by management. In addition, industry specialization is associated with greater audit assurance, and therefore, higher earnings quality. On the other side, although the majority of literature concluded that industry specialist auditors are better able to constrain earnings management behavior (e.g., Balsam et al., 2003; Sun and Liu, 2013), there are some few cases found little or no evidence to support that (e.g., Jenkins et al., 2006; Mascarenhas et al., 2010). The current study extends investigating the effect of audit firm specialization on earnings quality based upon results of prior research and posits that engaging industry specialist auditors will constrain earnings management, which is, reflected in high earnings quality.

H1: Auditor's industry specialization increases the ability to detect earnings management.

Industry Specialization and Financial Reporting Quality

The auditors are required to assess the risk of material misstatements whether caused by errors or fraud (Whittington and Pany, 2004). As a result of the impact of industry specialization on the audit, the financial reporting quality will be affected by audit industry specialization. This suggests that industry specialist auditors are producing higher quality reports or providing other benefits to their clients (Carson, 2009). Balsam et al. (2003) specified different ways to measure financial reporting quality, for example, auditor litigation, analyst rankings, Security Exchange Committee (SEC) enforcement actions, and earnings quality. Several studies documented an association between measures of higher quality auditors (such as industry expertise and auditor tenure) and higher quality of financial reporting (e.g., Johnson et al. 2002; Krishnan, 2003; Balsam et al., 2003; Ghosh and Moon, 2005). In addition, the effect of industry specialization on the financial reporting quality was examined in prior literature, where many studies investigated the relation between the audit industry specialization and financial reporting quality. For instance, Carcello and Nagy (2002) provided evidence that clients of industry specialist auditors are less likely to be associated with SEC enforcement actions. Also, there is evidence that audited financial statements are of higher quality when audited by industry specialists. For example, Balsam et al. (2003) and Krishnan (2003) documented that abnormal accruals are smaller for companies that were audited by national-level industry specialists, which implies that there is less managerial discretion and higher earnings quality for audit clients of national-level industry specialists (Reichelt and Wang 2010).

Moreover, a growing literature shows that firms audited by industry specialist auditors are associated with higher financial reporting quality (Mitra and Hossain, 2010). Moreover, several studies investigated the relation between auditor industry specialization and other aspects of financial reporting quality (e.g., Krishnan, 2005; Stanley and DeZoort, 2007; Romanus et al., 2008). The empirical literature provided evidence on a positive link between industry specialization at the audit firm level and financial reporting quality (Stanley and DeZoort, 2007). For instance, Dunn and Mayhew (2004) found a positive association between audit firm industry specialization and client disclosure quality proxied by analysts' evaluations in Association for Investment Management and Research (AIMR) reports. Carcello and Nagy (2004) found a negative association between audit firm industry specialization and client financial fraud disclosed in SEC Accounting and Auditing Enforcement Releases (AAERs). These studies' results support the prediction of a significant relation between industry specialization and the likelihood of financial restatement (Stanley and DeZoort, 2007).

Also, Romanus et al. (2008) indicated that auditor industry specialization increases the quality of certain aspects of the financial statements by imposing greater audit expertise on the financial reporting process. They extended prior research in this aspect by examining the influence of industry specialization on the likelihood of accounting restatements affecting core-operating accounts. Their study examined the impact of auditor industry specialization on a sample of restatement and non-restatement firms and found that auditor industry specialization is negatively associated with the likelihood of accounting restatement. Their findings are consistent with a growing body of evidence that indicates the major auditing firm's push toward industry specialization can provide explicit capital market benefits by increasing the quality of the audit and, correspondingly, increasing the quality of corporate financial statements. In addition, their results are consistent with industry specialization, enhancing auditor's role in improving the quality of the financial reporting process. Results of Romanus et al. (2008) demonstrated improvement in financial statement quality based on auditor's industry specialization, thus affecting the efficiency and effectiveness of the capital market system to the extent that it can increase investor confidence in corporate financial reports and the role the auditing profession plays in such process (Romanus et al, 2008).

In summary, several studies used financial reporting quality proxies including (quality of voluntary disclosures, discretionary accruals, and meeting or beating analysts' forecasts) to examine the association between industry specialization and quality of financial reporting (e.g., Carcello and Nagy, 2004; Dunn

and Mayhew, 2004; Stanley and DeZoort, 2007). Recent studies as Zerni (2012) and DeBoskey and Jiang (2012) determined archival studies that found industry specialist auditors help in improving financial reporting quality by constraining management's opportunistic accounting choice as measured in discretionary accruals (e.g., Carcello and Nagy 2002, 2004; Balsam et al., 2003; Krishnan, 2003; Gul et al., 2009). In the same trend of research, this paper hypothesized that there is a positive relationship between industry specialization and financial reporting quality.

H2: There is a positive relation between the auditor's industry specialization and financial reporting quality.

Industry Specialization and Audit Quality

The main objective of audit firms is improving the audit quality to achieve superiority in the audit market. Notwithstanding, all audits are assumed to meet minimum legal and professional standards of quality (Reichelt and Wang, 2010). The effectiveness of the auditor in reducing information asymmetries and the associated risks and detecting misstatements is a function of audit quality (Fernando et al., 2010). There are many quality attributes (i.e., market share, audit firm size, industry specialization, auditor tenure, and type of auditor opinion) which are examined in prior literature (e.g., Craswell et al., 1995; Francis, 2004; Fernando et al., 2010) to identify the effect of those attributes on the audit quality. Fernando et al. (2010) results evidenced the importance of the last four attributes of audit quality. In addition, a study by Francis (2004) found evidence of voluntary differential audit quality along a number of dimensions such as firm size and industry specialization. It is possible that auditor specialization creates both a differentiated product of higher quality and production efficiencies (Zerni, 2012: 320).

In general, auditing is viewed as a differentiated service with substantial variation observed in audit fees (Zerni, 2012). An important differentiation strategy, as described by Casterella et al. (2004), to be applied in audit firms is *specialization* strategy. By specializing in auditing certain industries, auditors may be able to differentiate their product from those of non-specialized auditors. The association between industry specialization and audit quality was not much discussed in the academic research until 2001. However, there is substantial volume of academic literature that assesses the effect of audit firm industry specialization on audit quality at present (Habib, 2011: 118). Some studies investigated the relationship between the auditor industry market share (as a proxy for industry specialization) and audit quality (e.g., Gramling et al., 2001; Carcello and Nagy, 2002; Cadman and Stein, 2007). These studies provided mixed results. Cadman and Stein (2007) found little evidence to support the conjecture that high market share auditors (specialists) provide higher quality audits within the Big 4. Their results do not support the use of market share as a proxy for industry specialization.

Moreover, most studies that examined the relation between audit quality and industry specialization had proxies for audit quality such as bid-ask spreads (e.g., Schauer, 2002; Almutairi et al., 2009). The bid-ask spread provides a direct measure of the reduction in information asymmetry associated with higher audit quality (Schauer, 2002). These studies provided evidence of positive association between audit quality and industry specialization. Moreover, prior studies reported less abnormal accruals for clients of national industry specialists (e.g., Balsam et al., 2003; Krishnan, 2003), clients audited by national industry specialists disclosed information of higher quality (e.g., Dunn and Mayhew, 2004), and national industry specialists are more likely to issue a going-concern audit opinion (as a proxy for audit quality) (e.g., Lim and Tan, 2008). These studies provided evidence that auditors' national industry expertise is associated with better audit quality. Reichelt and Wang (2010) extended this line of research and examined the impact of auditors' national and city-specific industry expertise on audit quality. Their results provided consistent evidence that audit quality is higher when the auditor is both a national and city-specific industry specialist.

Also, more recent analysis builds on prior studies arguing that auditor industry specialization is positively related to audit quality (e.g., Lowensohn et al., 2007; Robkob et al., 2011). Robkob et al. (2011) provided recent evidence from Thailand to support the positive relation between industry specialization and audit quality. They investigated the association between the components of audit

specialization (audit particular capability, audit specific knowledge, and audit especial experience) and audit quality. Their results indicated that the greater degree of audit specialization is more likely to achieve higher audit quality. In addition, Popova (2013) supported that audit quality is affected by prior client-specific experience. Overall, the results of most studies on auditor specialization suggested that industry specialist auditors deliver higher audit quality than do non-specialists and that this difference in quality is recognized by the audit market (Zerni, 2012).

In summary, some studies evidenced the positive relation between audit quality and earnings quality (e.g., Francis, 2004; Albring et al., 2004). Other studies have proxied for audit quality by a combination of FRQ measures, on the presumption that if auditors provide a high quality audit then it should be reflected in financial statements which, too, will be of high quality as measured by the FRQs (Habib, 2011: 118). In addition, several studies documented an association between measures of higher quality auditors (such as **industry expertise**) and higher quality of financial reporting (e.g., Krishnan, 2003; Balsam et al., 2003). This association is based on the argument that high-quality auditors are more likely to detect questionable accounting practices and mis-representations by management than low-quality auditors (Gul, 2009). The third hypothesis is built on the previous hypotheses and the association between earnings quality and audit quality, on one side, and audit quality and financial reporting quality, on another side.

H3: Audit quality is positively related to the extent of industry-based experience of auditors.

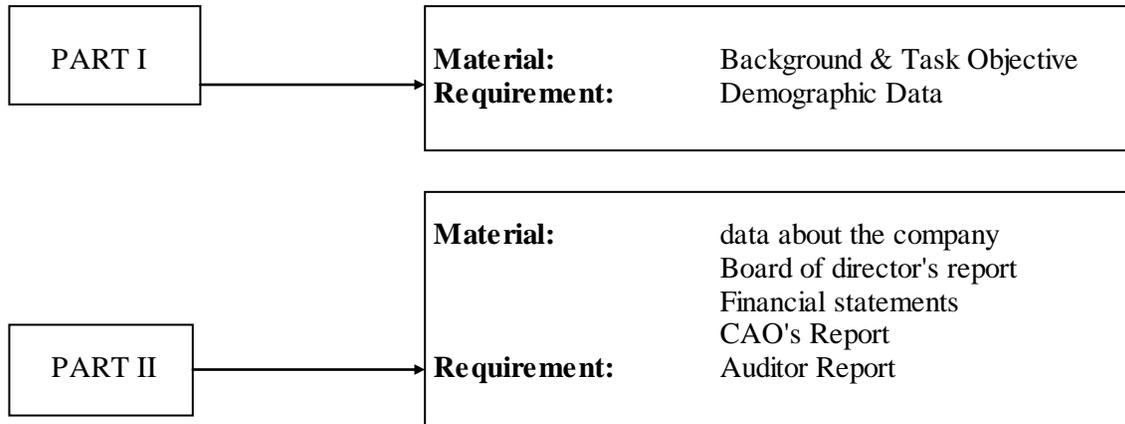
RESEARCH METHODOLOGY

An experiment was conducted in an audit firm with international affiliation, in Egypt. The audit firm chose the construction industry to represent the specialization. The participating auditors were classified as specialists and non-specialists based on their experience in auditing companies in this industry. The experiment was conducted during normal business hours after participants were given full time away from work permission during the course of the experiment. The industry-matched participants (i.e., auditors who specialize in the construction industry) and the industry-mismatched participants (i.e., auditors who specialize in an industry other than the contracting industry) were assigned to *test the effect of specialization on audit quality and earnings quality*. Thus, all participants were provided with the same audit experiment (materials) and are required to complete it.

The Experiment

The experiment was divided into two parts. The first part requires completing the experience of each participant, his qualification, and the time spent in completing the required parts. Meanwhile, the second part requires completing a specific report, where it needs participants to identify deficiencies/misstatements to be considered as qualifications and to complete the audit report based on the documents provided and the Central Auditing Organization's (CAO) report, which is appointed as other auditor because the Construction Company is owned by more than 20% of public funds. The participants received general instructions attached to the experimental material. The instructions show the main objective of the current study, which is shedding light on the effect of specialization on the audit quality. The instructions of each part in the experiment are indicated in the beginning of each part. The time span available for the experiment is two hours and half, where participants will need about two hours to complete the experiment and the remaining half hour is to introduce the basics of the experiment before starting the work. The participants are required to print the starting and ending times of their work within the experiment material. The experiment has been conducted under the supervision of experienced partner (more than 25 years of experience with CPA license) to oversee the execution of the experiment (in existence of a committee which consists of three members, one of them professor of auditing and the others are partners). The following figure summarizes the experiment.

**FIGURE 1
OVERVIEW OF THE EXPERIMENT**



Part I involves an introduction to the study, application of personal data and questions for eliciting information about participants' background. The introduction provides a brief overview about this study, the main objective and hypotheses of the study and the structure of the experiment. The application needs participants to print their names and provide information about their qualifications, their position, years of experience, years of specific experience in auditing construction companies, and the previous experience otherwise than their current audit firm.

Part II contains the core of experiment represented in background and financial information on a specific client company. Materials include documents containing basic data about the selected company, the board of director's report, the financial statements for the year 2012, and the CAO's report.

After receiving the experimental documents, the participants printed the required information in the application (part I). Then, they completed the audit report based on the CAO's report (part II). Finally, the participants completed the required experiment work. Eventually, the participants printed the ending time.

Participants

The selected sample size, shown in table (1), is 70 auditors to be the participants in the experiment. Twenty industry-matched auditors (firm-designated construction audit specialists) and fifty industry-mismatched auditors (firm-designated audit specialists in industries other than the construction industry) completed Construction Company auditing experiment.

**TABLE 1
NUMBER OF PARTICIPANTS**

Participants	Number	Percentages %
Specialists	20	28.5%
Non-specialists	50	71.5%
Total	70	100%

Testing the study hypotheses requires both groups (specialists and non-specialists) to be independent. Table (2) contains the percentages of participants in each group according to their experience and time spent in the experiment. On average, the industry specialist auditors had more experience in Construction industry than non-specialists. Also, the specialists spent less time in accomplishing the experiment than

non-specialists. Table (2) Panel A shows that most specialist auditors had an average of 5 years experience and the rest of them had more than 5 years, while few non-specialists had less than 5 years and the others had no experience (p-value < .05). Table (2), Panel B shows that the percentage of specialists who spent about 1 hour compared with non-specialists are greater and significant (p < .05).

TABLE 2
CONSTRUCTION INDUSTRY (TIME AND EXPERIENCE)

Panel A: Experience in Construction industry

	Specialists in the Construction industry	Non-specialists with Construction Industry Experience
No Experience	-	84%
Less than 5 years Experience	60%	16%
More than 5 years	40%	-

Panel B: Time spent in the experiment

	Specialists in the Construction industry	Non-specialists with Construction Industry Experience
Up to 1 hour	40%	-
More than 1 and less than 2 hours	20%	60%
Exactly 2 hours	40%	40%

RESULTS AND DISCUSSION

Logic Analysis

The researchers analyze the qualifications obtained from the audit reports, which were prepared by participants, logically. They use the Internal Control (IC) deficiencies qualifications for investigating the effect of industry specialist auditors on earnings management. Also, they use non-compliance with Egyptian Accounting Standard (EAS) / International Financial Reporting Standard (IFRS) qualifications to measure the effect of industry specialization on financial reporting quality. In addition to the previous two sets of qualifications, the researchers consider insufficiency of evidence qualifications as setting for investigating the effect of industry specialization on audit quality.

From table (3), some of the participants consider the mentioned IC deficiencies and audit risk deficiencies/misstatements as qualifications. First, less than half of the respondents from the industry specialist auditors group (40%) specified the deficiency/misstatement "there are no regular cost records" as a qualification. About (30%) specialists specified that "No preparation for revenues and costs statement of operations" and "no documents were submitted to the ordinary general assembly to obtain its approval before making the compensations contracts" as qualifications. Also, two deficiencies/misstatements were specified by about (20%) specialists, which are, "the contract procedures for the land haven't been completed" and "the delay in preparing the financial statements" as qualifications. Second, few non-specialized auditors consider the IC deficiencies mentioned in table (3) as qualifications. Nearly (28%) of respondents from non-specialists group specified the deficiency/misstatement "there is no preparation for revenues and costs statement" as qualification. About (24%) of non-specialist auditors specified two deficiencies/misstatements, which are, "there are no regular cost records" and "the contract procedures for the land haven't been completed" as qualifications. Just (20%) of non-specialists specified "the delay in

preparing the financial statements" to be considered as a qualification. Also, (16%) of non-specialists specified "none submitted to the ordinary general assembly to obtain its approval before making the compensations contracts" as a qualification. It is noticed that the difference between the percentages of both specialists and non-specialists in relation to the IC deficiencies qualifications, mentioned in table (3), is not significant, where $p\text{-value} > .05$. To conclude, the results show there is no significant difference between the performance of industry specialist auditors and non-specialists in determining the IC deficiencies to be considered as qualifications.

Comparing the IC deficiencies that were considered as qualifications in the model answer prepared by the expert partner with similar deficiencies determined by both the specialist and non-specialists auditors (1), the researchers found about (20%) of specialists and non-specialists groups agreed with the qualification in the model answer that "the delay in preparing the financial statements led to presenting them to the management after the required time and the general assembly was not convened in the legal date". There is almost no difference between specialists and non-specialists in identifying this qualification. The difference between the percentages of both specialists and non-specialists that chose this qualification is not significant, where $p\text{-value} > .05$. That means there is no significant difference between the performance of specialists and non-specialists group in constraining earnings management. In addition, there is no significant effect of industry specialization on earnings quality. So, the results of logic analysis do not support the first hypothesis.

It can be noticed that the percentages of specialists are higher than that of non-specialists in most deficiencies/misstatements related to EAS/IFRS compliance, where they were ranging between (60%) and (10%). On the contrary, the percentages of non-specialist are almost low, ranging between (24%) and (4%). Also, the difference between specialists and non-specialists in identifying the most of non-compliance with EAS/IFRS qualifications is significant, where $p\text{-value} < .05$. This may indicate the effect of industry specialization on the financial reporting quality.

Table (4) indicates that the non-compliance with EAS/IFRS qualifications that were obtained from the model answer is compared with those that were determined by both specialist auditors and non-specialists. The first three qualifications in the model answer, "The cash account included balances in banks, which are blocked", "the debit balances, which are non-moving for long periods, have reached L.E. 101 million", and "the supplier's account included an accrued credit balance" gained an agreement from specialists (60%), (50%), and (40%) respectively. In addition, while these qualifications gained acceptance from non-specialists (12%), (24%), and (12%) respectively. The last qualification in the model answer is "the executed works for the customer weren't collected". Only (12%) of non-specialists and (10%) of specialists agreed with this qualification and supported it. The differences between the percentages of both specialists and non-specialists that agreed with most of qualifications (as determined in the model answer) are significant, where $p\text{-value} < .05$. That means there is significant difference between the performance of industry specialist auditors and non-specialists in providing financial reporting quality. Therefore, there is a positive effect of industry specialization on financial reporting quality. The high degree of agreement that was obtained from specialists may support the effect of industry specialization on the financial reporting quality (H2).

TABLE 3
IC QUALIFICATIONS

Qualification	Specialists		Non-specialists		p-value
	Freq.	%	Freq.	%	
1- There are no regular cost records and the cost system needs to be developed.	8	40	12	24	0.14
2- No preparation for revenues and costs statement for individual projects since their start until 31/12/2012 and calculation of the expected losses of such projects.	6	30	14	28	0.54
3- No documents were submitted for approval from the ordinary general assembly before agreeing about the compensations contracts.	6	30	8	16	0.16
4- The contract procedures for the land which is 41000 Sq2 were not completed up to the date of the financial statements.	4	20	12	24	0.49
5- The delay in preparing the financial statements led to presenting them to the management in 6/5/2013 and the general assembly didn't make its meeting in the legal date.	4	20	10	20	0.6

Frequencies, percentages, and p-values(IC qualifications (in the model answer) are shaded)

TABLE 4
NON-COMPLIANCE WITH EAS/IFRS QUALIFICATIONS

Qualifications	Specialists		Non-specialists		p-value
	Freq.	%	Freq.	%	
Participants					
1- The cash account included L.E. 705000 as balances in banks, which provided as guarantee for letter of guarantee without proper disclosure.	12	60	6	12	0.00
2- The debit balances, which are non-moving for long periods, have reached to L.E. 101 million and the provision for these balances are not considered sufficient.	10	50	12	24	0.035
3- The supplier's account included L.E.10.14 million as an accrued credit balance for the Iron Company which was not paid since 2011.	8	40	6	12	0.012
4- The investments in new assets were L.E. 76.7 million used to buy new equipments without preparing an economic feasibility study to assess the need for such equipments and related finance alternatives.	6	30	12	24	0.4
5- The inventory included some stagnant items, which are valued at L.E. 135000, and some obsolete inventory items.	6	30	10	20	0.27
6- The real estate investments included L.E. 7.4 million, (i.e. land) to be used as administrative building.	4	20	10	20	0.6
7- There are some of letters of guarantee letters for completed projects need to be redeemed.	4	20	6	12	0.304
8- There are amounts of L.E. 1.8 million, which are from credit accounts, creditors and suppliers balances considered outdated liabilities and were added to revenues.	4	20	2	4	0.051
9- The executed projects for the customer (i.e. the religious organization), amounted to L.E. 23.3 million, were not submitted (approved) by customers and were not collected.	2	10	6	12	0.58
10- The tax disputes amounted to L.E. 11.6 million (for 3 years 2005, 2006, and 2007) and the tax differences for years 2006 and 2007, which are L.E. 6.5 million, were adjusted from the recorded profits.	2	10	4	8	0.55

Frequencies, percentages, and p-values

The Non-compliance with EAS/IFRS qualifications (in the model answer) is highlighted and shaded

TABLE 5
INSUFFICIENCY OF EVIDENCE QUALIFICATIONS

Qualifications	Specialists		Non-specialists		p-value
	Freq.	%	Freq.	%	
1- The confirmations for many debit and credit balances haven't been sent for the accounts balances in balance sheet as at 31/12/2012.	14	70	18	36	0.01
2- The debit balances included about L.E. 7.9 million as commercial profits tax, which is deducted from the company dues by customers without supported documents to approve such treatment.	8	40	4	8	0.003

Frequencies, percentages, and p-values (The Insufficiency of Evidence qualifications (in the model answer) are shaded).

The results of table (5) indicate that insufficiency of evidence qualifications that were determined by specialist and non-specialists auditors are the same as those in the model answer. The model answer considered "the confirmations for many debit and credit balances haven't been sent" and "the debit balances included commercial profits tax, which is deducted from the company dues by customers without supported documents" as qualifications. Many specialists (70%) and (40%), respectively, agreed. On the other side, only (36%) and (8%) of respondents in non-specialists group, respectively, agreed. It is clearly noticed that the differences between the percentages of both specialists and non-specialists that agreed with the two qualifications (as determined in the model answer) are significant. The reason is that p-value for these percentages are less than .05. That means there is significant difference between the performance of specialists and non-specialists group in providing high audit quality, which assures the superiority of industry specialist auditors. Therefore, there is an effect of industry specialization on audit quality. This finding supports the positive relation between specialization and audit quality.

To conclude, the qualifications in the model answer had percentages of agreement from specialists group higher than that from non-specialists. The specialist auditors were able to provide the required report that was closest to the model answer. In other words, the specialists can provide higher quality to the audit work rather than non-specialists. The previous analyses for the responses of both specialists and non-specialists provided evidence that the specialization in auditing specific industry would improve financial reporting quality and auditor performance, which in turn support the second and third hypotheses.

Descriptive Statistics

First, tests of normality (Kolmogorov–Smirnov, Shapiro-Wilk) were conducted to test the normality of the sample and the results of these tests ensured that groups are normally distributed. Then, test of the reliability for all variables was conducted, where the Cronbach's Alpha = .89 and that means there is a high degree of stability in the sample. Spearman's Correlation, T-test, Regression, and ANOVA were run to test the study hypotheses.

Table (6) presents the results of testing the first hypothesis (H1), which predicted that auditor's industry specialization increases the ability to constrain earnings management. These results were obtained from analyzing the data of IC deficiencies qualifications in the audit report, which is prepared by participants. The difference between the performance of both specialists and non-specialists that chose the IC qualifications are not significant, where p-value for most IC qualifications is greater than .05. Also, Table (6) Panel B shows that specialists {mean= 1.4} outperform non-specialists in constraining earnings management {mean= 1.12} but the difference between means is not significant {t = -1.16, p-value > .05,

2-tailed}. That means there is no significant difference between the performance of specialists and non-specialists in detecting earnings management. In addition, there is a correlation between industry specialization and earnings quality but is not significant { $R = .140$, p -value $> .05$, 1-tailed} as shown in Table (6) Panel C. It was found that the industry specialization explain only 2% from any changes happen to earnings quality ($R^2 = 0.020$) and this percentage is very weak. The results do not provide evidence to support the effect of industry specialization on earnings quality (H1).

At the same time, the model answer of the audit report, nearly, did not include IC deficiencies qualifications (just one qualification). Nevertheless, the audit reports obtained from participants (specialists and non-specialists) included some IC deficiencies qualifications and that contradict the model answer. The consistency in the performance of industry specialist auditors and non-specialists may be because both of them misunderstood the importance of IC deficiencies and they felt they are required to include such deficiencies in the auditor report without assessing the implication of such deficiencies in the financial statements. The contradiction between the model answer and the audit reports obtained from participants may justify the results of testing the first hypothesis.

The empirical findings of testing the first hypothesis may contradict the results of several prior studies that supported the superior ability of industry specialist auditors in constraining the earnings management (e.g., Balsam et al., 2003; Krishnan 2003; DeBoskey and Jiang, 2012). Balsam et al., (2003) and Krishnan (2003) evidenced that those clients of industry specialist auditors having higher earnings quality than clients of non-specialists. However, the findings of testing the first hypothesis may be consistent with results of few prior studies that found little or no evidence to support the effect of industry specialization on earnings management (e.g., Jenkins et al., 2006; Chi et al., 2009; Mascarenhas et al., 2010). The results of Jankins et al. (2006) showed that the effectiveness of industry specialist auditors was limited and that they were associated with some earnings quality decline. These results imply a pervasive earnings quality decline during specific period that even high quality auditing was insufficient to fully prevent. Also, Mascarenhas et al. (2010) found no support for the view that specialist auditors are better at identifying and constraining opportunistic discretionary accruals.

TABLE 6
DESCRIPTIVE STATISTICS AND CORRELATION

Panel A: p-value (H1) (2)			
	Specialists (n = 20)	Non-specialists (n = 50)	
IC Qualifications in CAO's report (Model)	5 (1) qualifications		P > .05
Panel B: Mean , Std. Deviation			
			t-statistic
IC in CAO's report (Model)	1.4, .753 (-)	1.12, .961 (-)	-1.16 (-)
Panel C: Correlation			
IC in CAO's report (Model)	R = .140 (-)		Sig.=.124 (-)
IC in CAO's report (Model)	R2 = .02 (-)		

The results presented in Tables (7) and (8) are consistent with H2 and H3. H2 predicted that there is a positive relation between the auditor's industry specialization and financial reporting quality. Table (7) presents the results of testing H2. These results were obtained from analyzing the data of Non-compliance with EAS/IFRS (Non-com.) qualifications in the audit report. The differences between the percentages of both specialists and non-specialists that chose the ideal Non-com. qualifications (as in the model answer)

are significant (p-value < .05 for most percentages). Table (7) Panel B shows that industry specialist auditors according to CAO's report and (its model answer) {mean 2.9 (1.6)} outperform non-specialists {mean 1.48 (.6)} in providing financial reporting quality and the difference between means is significant {t = -3.84 (-4.76), p < .05, 2-tailed}. Also, there is a correlation between the independent variable (industry specialization) and dependent variable (financial reporting quality) based on CAO's report and (its model answer) {R= .423 (.5), p < .05, 1-tailed}. The results are consistent with the hypothesis and support the positive relation between the industry specialization and financial reporting quality. The findings evidenced the positive association between industry specialization and quality of financial reporting. These results are consistent with the results of several prior studies that supported the association between industry specialization and quality of financial reporting (e.g., Carcello and Nagy, 2004; Dunn and Mayhew, 2004; Stanley and DeZoort, 2007; Romanus et al., 2008; Sun and Liu, 2011).

TABLE 7
DESCRIPTIVE STATISTICS AND CORRELATION

Panel A: p-value (H2) (3)			
	Specialists (n = 20)	Non-specialists (n = 50)	
Non-compliance with EAS Qualifications in CAO's report (Model)	7 (1) qualifications 3 (-)qualifications		P > .05 P < .05
Panel B: Mean , Std. Deviation		t-statistic	
Non-compliance with EAS in CAO (Model)	2.9, 1.410 (1.6, .882)	1.48, 1.388 (.6, .755)	-3.84 (- 4.76)
Panel C: Correlation			
Non-compliance with EAS in CAO's report (Model)	R = .423 (.50)		Sig.=.000 (.000)
Non-compliance with EAS in CAO's report (Model)	R2 = .179 (.25)		

H3 predicted that audit quality is positively related to the extent of industry-based experience of auditors. Table (8) presents the results of testing H3. These results were obtained from analyzing the data of IC, Non-compliance with IFRS/EAS, and Insufficiency of evidence (Insu.) qualifications in the audit report. The differences between the percentages of specialists versus non-specialists that chose the ideal IC, Non-compliance with IFRS/EAS, and Insufficiency of audit evidence qualifications are significant (p-value < .05 for most percentages). Table (8) Panel B shows that industry specialist auditors according to CAO's report and (its model answer) {mean 1.1 (1.1)} outperform non-specialists {mean .44 (.44)} in providing audit quality and the difference between means is significant {t = -4.58 (-4.58), p < .05, 2-tailed}. Also, there is a high correlation between the independent variable (industry specialization) and dependent variable (audit quality) based on CAO's report and (its model answer) {R= .477 (.558), p < .05, 1-tailed} as shown in Panel C. The results provide significant evidence to support the positive relation between industry specialization and audit quality.

TABLE 8
DESCRIPTIVE STATISTICS AND CORRELATION

Panel A: p-value (H3) (4)			
	Specialists (n = 20)	Non-specialists (n = 50)	
Insu. Qualifications in CAO's report (Model)	2 (2) qualifications		P < .05
Panel B: Mean , Std. Deviation			
			t-statistic
IC. Non-com. Insu. in CAO's report (Model)	1.1, .552 (1.1, .552)	.44, .540 (.44, .540)	-4.58 (- 4.58)
Panel C: Correlation			
IC. Non-com. Insu. in CAO's report (Model)	R = .477 (.558)		Sig.=.000 (.000)
IC. Non-com. Insu. in CAO's report (Model)	R2 = .227 (.312)		

To test H1, H2, and H3, an ANOVA test was run. The results in Table (9) found that the effect of industry specialization on earnings quality is not significant ($F = 1.358$, $p > .05$), failing to support H1. Also, Table (9) provides results to support H2 and H3. A significant interaction between industry specialization and financial reporting quality was found based on CAO's report and (its model answer) $\{F = 14.808$ (22.697), $p < .05\}$. Also, there is a strong positive effect of industry specialization on audit quality based on CAO's report and (its model answer) $\{F = 19.985$ (30.797), $p < .05\}$. The results didn't support the first hypothesis but significantly supported the second and third hypotheses.

TABLE 9
CONSTRUCTION INDUSTRY

<i>ANOVA for Construction industry (H1,H2,H3)</i>		
Specialists versus Non-specialists	F	P-value
Specialization and IC in CAO	1.358	.248
Specialization and Non-com. in CAO (Model)	14.808 (22.697)	.000 (.000)
Specialization and IC. Non-com. Insu. in CAO (Model)	19.985 (30.797)	.000 (.000)

CONCLUSION

The purpose of this study is to investigate the effect of industry specialization on the audit quality. The study compared the performance of industry specialist auditors and non-specialists in an Egyptian audit firm to measure the effect of industry specialization on audit quality. Auditors of clients in specific industry are required to gain relatively more industry-based experience than auditors of clients in different

industries. This experience is gained through extended exposure to clients in the same industry. This difference was hypothesized to result in significant performance gains when comparing industry specialist auditors with non-specialists. An experiment was conducted to compare the performance of industry specialist auditors in Construction industry with non-specialists. Industry-specialist auditors didn't perform significantly better than non-specialists in constraining earnings management. So, there is no significant evidence to support the effect of industry specialization on earnings quality. Although this result may contradict prior literature in the same line of research (e.g., Balsam et al., 2003; Krishnan, 2003; Albring et al., 2004; Kwon et al., 2007; Mitra and Hossain, 2010; Sun and Liu, 2013), it agrees with few studies that found little or no evidence to support the effect of industry specialization on earnings management (e.g., Chi et al., 2009; Mascarenhas et al., 2010). On the other hand, industry specialist auditors perform significantly better than non-specialists in detecting fraud and misstatements. Also, the industry specialist auditors will be more competent to report questionable accounting practice.

The present study contributes to the industry specialization literature by providing evidence that industry specialization is positively related to financial reporting quality. This finding supports and extends contemporaneous research results (e.g., Carcello and Nagy, 2002, 2004; Krishnan, 2005; Romanus et al., 2008; Gul et al., 2009). Also, it provides significant evidence to support the effect of industry specialization on audit quality. This result is significantly consistent with substantial research (e.g., Low, 2004; Reichelt and Wang, 2010; Robkob et al., 2011; Karjalainen, 2011; Popova, 2013). Industry-specialist auditors have been found to consistently outperform non-specialists, especially in providing financial reporting quality and improving audit quality. The findings logically and statistically supported H2 and H3.

The reported results should be considered in light of the normal limitations that apply to experiments. Although this study focused on the industry specialization inside the audit firm and compared between the performance of specialists and non-specialists in the same audit firm, an experiment was sufficient to perform the required investigation. It is possible that the results could differ if additional audit firms were used in the experiment. Participants' co-operation and the presence of experienced partner for all stages of the experiment contributed in conducting the experiment successfully. The current study compared between both specialists and non-specialists inside the same audit firm and using one industry setting (Construction). Future research could extend this comparison to different industries and between audit firms in Egypt. The comparison between industry specialist audit firm and non-specialist firm may provide additional insights and support the current findings that will contribute in generalizing the results.

ENDNOTES

1. The researcher obtained model answer of the audit report, which was prepared by a partner in CPA firm with more than 25 years of experience, based on the content of CAO's report.
2. The p-values for the difference between the numbers of specialist auditors and non-specialists, which identified the IC qualifications in their audit report, were calculated.
3. The p-values for the difference between the numbers of specialist auditors and non-specialists, which identified non-compliance with EAS qualifications in their audit report, were calculated.
4. The p-values for the difference between the numbers of specialist auditors and non-specialists, which identified insu. qualifications in their audit report were calculated.

REFERENCES

- American Institute of Certified Public Accountants (AICPA). (1993). *Conflicts of interest in litigation services engagements*. New York: AICPA.
- Albring, S., Elder, R., & Zhou J. (2004). Audit firm size, industry specialization and earnings management by initial public offering firms in the IPO year. Available: <http://www.AAA.com>
- Almutairi, A., Dunn, K. A., & Skamtz, T. (2009). Auditor tenure, auditor specialization, and information asymmetry. *Managerial Auditing Journal*, 24(7), 600–623.

- Balsam, S., Krishnan, J., & Yang, J. S. (2003). Auditor industry specialization and earnings quality. *Auditing: A Journal of Practice & Theory*, 22(2), 71–97.
- Burnett, B., Cripe, B., Martin, G., & McAllister, B. (2012). Audit quality and the trade-off between accretive stock repurchases and accrual-based earnings management. *The Accounting Review*, 87(6), 1861-1884.
- Cadman, B., & Stein, M. (2007). Industry specialization and auditor quality in U.S. Markets. Available: [http:// www.ssrn.com/abstract](http://www.ssrn.com/abstract) (July, 2007)
- Cahan, S. F., Godfrey, J. M., Hamilton, J., & Jeter, D. C. (2008). Auditor specialization, auditor dominance, and audit fees: the role of investment opportunities. *The Accounting Review*, 83(6), 1393–1424.
- Carcello, J. V., & Nagy, A. L. (2002). Auditor industry specialization and fraudulent financial reporting. Paper presented at the Deloitte & Touche University of Kansas Symposium on Auditing Problems, May.
- Carcello, J. V., & Nagy, A. L. (2004). Client size, auditor specialization and fraudulent financial reporting. *Managerial Auditing Journal*, 19(5), 651–668.
- Carson, E., & Fargher, N. (2007). Note on audit fee premium to client size and industry specialization. *Accounting & Finance*, 47(3), 423-446.
- Carson, E. (2009). Industry specialization by global audit firm networks. *The Accounting Review*, 84(2), 331–354.
- Casterella, J. R., Francis, J. R., Lewis, B. L., & Walker, P. L. (2004). Auditor industry specialization, client bargaining power, and audit pricing. *Auditing: A Journal of Practice & Theory*, 23(1), 123–140.
- Chen, K. Y. & Elder, R. J. (2001). Industry specialization and audit fees: The effect of industry type and market definition, *Working Paper*, National Cheng Kung University and Syracuse University.
- Chi, W., Huang, W., Liao, Y., & Xie, H. (2009). Mandatory audit partner rotation, audit quality, and market perception: Evidence from Taiwan. *Contemporary Accounting Research*, 26(2), 359–391.
- Craswell, A., Francis, J., & Taylor, S. (1995). Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics*, 20(3), 297-322.
- DeBoskey, D. G., & Jiang, W. (2012). Earnings management and auditor specialization in the post-sox era: An examination of the banking industry, *Journal of Banking & Finance*, 36, 613-623.
- DeFond, M. L. (1992). “The association between changes in client firm agency costs and auditor switching.” *Auditing: A Journal of Practice & Theory*, 16- 31.
- DeFond, M., Francis, J. & Wong, T. (2000). Auditor industry specialization and market segmentation: Evidence from Hong Kong. *Auditing: A Journal of Practice and Theory* 19: 49-66.
- Dowling, C. & Moroney, R. (2008). Auditor performance variation: impact of sub-specialty knowledge differences between industry-specialists, *Advances in Accounting Behavioral Research*, 11(1), 59-79.
- Dunn, K. A., Mayhew, B. W., & Morsfield, S. G. (2000). Auditor industry specialization and client disclosure quality, *Working Paper*, Baruch College-CUNY, University of Wisconsin, and The Capital Markets Company.
- Dunn, K. A., & Mayhew, B. W. (2004). Audit firm industry specialization and client disclosure quality. *Review of Accounting Studies*, 9, 35–58.
- Ferguson, A., & Stokes, D. (2002). Brand name audit pricing, industry specialization, and leadership premiums post Big-8 and Big 6 mergers. *Contemporary Accounting Research*, 19(1), 77–110.
- Fernando, G., Abdel-Meguid A., & Elder R. (2010). Audit quality attributes, client size and cost of equity capital, *Review of Accounting and Finance*, 9(4), 363-381.
- Fleming, D. M., & Romanus, R. N. (2007). Auditor industry specialization and audit fees surrounding section 404 implementation. *Working paper*, San Diego State University and Texas Tech University.
- Fleming, D. M., Hee, K., & Romanus, R. N. (2014). Auditor industry specialization and audit fees surrounding section 404 implementation, *Review of Accounting and Finance*, 13(4), 353-370.

- Francis, J. R., Reichelt, K., & Wang, D. (2005). The pricing of national and city specific reputations for industry expertise in the US audit market. *The Accounting Review*, 80(1), 113–136.
- Francis, J. R., Khurana, I. K., & Pereira, R. (2005). Disclosure incentives and effects on cost of capital around the world. *The Accounting Review*, 80(4), 1125-1162.
- Francis, J. R. (2004). What do we know about audit quality? *British Accounting Review*, 36, 345–368.
- Fung, S., Gul, F., & Krishnan, G. (2012). City-level auditor industry specialization, economies of scale, and audit pricing, *The Accounting Review*, 87, (4), 1281-1307.
- Ghosh, A., & Moon, D. (2005). Auditor tenure and perceptions of audit quality. *The Accounting Review*, 80(2), 585–612.
- Gramling, A., & Stone, D. (2001). Audit firm industry expertise: A review and synthesis of the archival literature. *Journal of Accounting Literature*, 20, 1-27.
- Gramling, A. A., Johnson, V. E. & Khurana, I. K. (2001). Audit firm industry experience and financial reporting quality. *Working paper*, Georgia State University.
- Green, W. (2008). Are industry specialists more efficient and effective in performing analytical procedures? A multi-stage analysis. *International Journal of Auditing*, 12, 243-260.
- Grenier, J. H. (2010). Encouraging professional skepticism in the industry specialization era: a dual-process model and an experimental test, Dissertation, University of Illinois, Urbana, Available: <http://hdl.handle.net/2142/16041>
- Gul, F. A., Fung, S. Y. T., & Jaggi, B. (2009). Earnings quality: Some evidence on the role of auditor tenure and auditors' industry expertise. *Journal of Accounting and Economics*, 47, 265–287.
- Habib, A. (2011). Audit firm industry specialization and audit outcomes: Insights from academic literature, *Research in Accounting Regulation*, 23, 114-129.
- Hogan, C., & Jeter, D. (1999). Industry specialization by auditors. *Auditing: A Journal of Practice and Theory*, 18(1), 1–17.
- Huang, Hua.-Wei, Liu, Li.-Lin., Raghunandan, K., Rama & Dasaratha, V. (2007). Auditor industry specialization, client bargaining power, and audit fees: Further evidence. *Auditing: A Journal of Practice & Theory*, 26(1), 147–158.
- International Auditing and Assurance Standards Board's (IAASB), 2013, reporting on Audited Financial Statements: Proposed New and Revised International Standards on Auditing (ISAs). Available: www.ifac.org
- Ittonen, K., Johnstone, K., & Myllymäki, E. R. (2010). Characteristics of individual audit partners and their client portfolios: Effects on discretionary accruals and audit fees. *Working paper*, University of Vaasa, and University of Wisconsin School of Business.
- Jenkins, D. S., Kane, G. D., & Velury, U. (2006). Earnings quality decline and the effect of industry specialist auditors: An analysis of the late 1990s. *Journal of Accounting and Public Policy*, 25, 71-90.
- Johnson, V., Khurana, I. K., & Reynolds, J. K. (2002). Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research*, 19, 637-660.
- Karjalainen, J. (2011). Audit partner industry specialization and earnings quality of privately-held companies, *Auditing: A Journal of Practice & Theory*, 19(1), 49-66.
- Krishnan, G. V. (2005). The association between Big 6 auditor industry expertise and the asymmetric timeliness of earnings. *Journal of Accounting, Auditing & Finance*, 20(3), 209-228.
- Krishnan, G. V. (2003). Does Big 6 auditor industry expertise constrain earnings management? *Accounting Horizons*, 17 (Supplement), 1-16.
- Kwon, S. Y., Lim, C. Y., & Tan, P. M. S. (2007). Legal systems and earnings quality: the role of auditor industry specialization. *Auditing: A Journal of Practice & Theory*, 26(2), 25–55.
- Lim, C. Y., & Tan, H. T. (2008). Non-audit service fees and audit quality: The impact of auditor specialization. *Journal of Accounting Research*, 46(1), 199-246.
- Low, K. (2004). The effects of industry specialization on audit risk assessments and audit-planning decisions, *The Accounting Review*, 79(1), 201-219.

- Lowensohn, S., Johnson, L. E., Elder, R. J., & Davies, S. P. (2007). Auditor specialization, perceived audit quality, and audit fees in the local government audit market. *Journal of Accounting and Public Policy*, 26, 705-732.
- Lys, T., & Watts, R. L. (1994) Lawsuits against auditors, in Gramling, A. A., & Stone, D. N. (2001). Audit firm industry expertise: a review and synthesis of the archival literature, *Journal of Accounting Literature*, 20, 1-27.
- Mascarenhas, D., Cahan, S., & Naiker, V. (2010). The effect of audit specialists on the informativeness of discretionary accruals. *Journal of Accounting, Auditing and Finance*, 25(1), 53-84.
- Mayhew, B. W., & Wilkins, M. S. (2003). Audit firm industry specialization as a differentiation strategy: Evidence from fees charges to firms going public. *Auditing: A Journal of Practice & Theory*, 22(2), 33–52.
- Mitra, S., & Hossain, M. (2010). Auditor's industry specialization and earnings management of firms reporting internal control weaknesses under SOX Section 404. *Working paper*, Wayne State University and University of Memphis.
- Moroney, R. & Carey, P. (2007), 'Industry versus task-based experience and auditor performance', *Working Paper*, AFAANZ Conference, Gold Coast.
- Popova, V. (2013). Exploration of skepticism, client-specific experience, and audit judgments, *Managerial Auditing Journal*, 28(2), 140-160.
- Reichelt, K. J., & Wang, D. (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research*, 48(3), 647-686.
- Robkob, P., Sangboon, K., & Leemanonwarachai, T. (2011). The effect of audit specialization on audit quality: an empirical study of tax auditors in Thailand, *Review of Business Research*, 11(4).
- Romanus, R. N., Maher, J. J., & Fleming, D. M. (2008). Auditor industry specialization, auditor changes, and accounting restatements. *Accounting Horizons*, 22(4), 389-413.
- Schauer, P. C. (2002). The effects of industry specialization on audit quality: an examination using bid-ask spreads, *Working Paper*. Bowling Green state University. Available: <http://aaahq.org>
- Schipper, K. & Vincent, L. (2003). Earnings quality, *Accounting Horizons*, 17, 97-115.
- Scott, W. D. & Gist, W.E. (2013). Forced auditor change, industry specialization and audit fees, *Managerial Auditing Journal*, 28(8), 708-734.
- Solomon, I., Shields, M. D., & Whittington, O. R. (1999). What do industry-specialist auditors know? *Journal of Accounting Research*, 37 (Spring), 191-208.
- Srinidhi, B., Lim, Chee Yeow, & Hossain, M. (2009). Effects of country-level legal, extra-legal and political institutions on auditing: A cross-country analysis of the auditor specialization premium. *Journal of Contemporary Accounting and Economics*, 5, 34-46.
- Sun, J. & Liu, G. (2011). Industry specialist auditors, outsider directors, and financial analysts, *Journal of Accounting Public Policy*, 30, 367-382.
- Sun, J. & Liu, G. (2013). Auditor industry specialization, board governance, and earnings management, *Managerial Auditing Journal*, 28 (1), 45-64.
- Stanley, J. D., & DeZoort, F. T. (2007). Audit firm tenure and financial restatements: An analysis of industry specialization and fee effects. *Journal of Accounting and Public Policy*, 26, 131-159.
- Velury, U. (2003). The association between auditor industry specialization and earnings management. *Research in Accounting Regulation*, 16, 171–184.
- Verleyen, I., & Beelde, I. (2011). International consistency of auditor specialization, *International Journal of Auditing*, 15, 275–287.
- Wallace, A. W. (1981), "The association between municipal market measures and selected financial reported practices", *Journal of Accounting Research*, 19(2), 502-20.
- Wang K., O, Sewon, & Iqbal, Z. (2009). Audit pricing and auditor industry specialization in an emerging market: Evidence from China, *Journal of International Accounting, Auditing and Taxation*, 18, 60-72.
- Whittington, O. R. & Pany, K. (2004). *Principles of Auditing and Other Assurance Services*. New York: Mc Graw Hill.

- Zhou, J., & Elder, R. (2004). Audit quality and earnings management by seasoned equity offering firms. *Asia Pacific Journal of Accounting and Economics*, 11(2), 95-120.
- Zerni, M. (2012). Audit partner specialization and audit fees: some evidence from Sweden. *Contemporary Accounting Research*, 29(1), 312-340.