AUDITOR'S STRESS AFFECTING AUDIT QUALITY: AN INVESTIGATION IN VIETNAMESE AUDITING FIRMS

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DOIs: https://www.doi.org/10.46242/jstiuh.v76i4.5539

Abstract.
The purpose of this study is to investigate factors that influence auditor stress and the impact of auditor stress on reduced quality reducing behaviour job performance. We surveyed 906 auditors who are working in auditing firms in Vietnam. The research design relies on exploratory factor analysis and regression analysis to ensure the reliability and validity of the results. The findings show that auditor stress is positively related to professional pressure (e.g., workload and time pressure) and leadership style but is negatively related to role ambiguity and conflict. However, we do not find evidence that type-A behaviour is related to auditor stress. Next, we find that auditor stress is related to reduced audit-quality behaviour.
The research is beneficial for practitioners, especially directors of auditing firms. Understanding auditor stress and its impacts on reduced quality reducing behaviourreduced quality reducing behaviourjob performance can help auditing firms establish a working environment and policies to support auditors. This is the first to document evidence for auditor stress and its impacts on reduced quality reducing behaviour in the Vietnamese market.
This study addresses the critical need for understanding auditor stress and its impacts on audit quality in Vietnam, a rapidly developing market where auditing practices face unique pressures and challenges. Our empirical results reveal that auditor stress significantly influences behaviors relating to reduced audit quality (REAQ) ($\beta = 0.373$, $p < 0.01$), underscoring the importance of managing auditor stress effectively to maintain audit quality standards.

Keywords. auditor, stress, audit quality, Vietnam

1. INTRODUCTION

The auditing profession is well-known for its complexity and high demands, with auditors facing numerous stressors such as tight deadlines and the need to maintain high standards of quality and independence. In this research, using Vietnamese data, we investigate factors that influence auditor stress and the impact of auditor stress on reduced quality reducing behaviour.

The literature provides emerging evidence on determinants of auditor stress. Auditor stress is found to be related to workload and time pressure (McDaniel, 1990; Pierce and Sweeney, 2010; López and Peters, 2012; Svanström, 2016; Bennett and Hatfield, 2017; Pietsch and Messier, 2017; Persellin et al., 2019), role ambiguity and conflict (Bamber et al., 1989; Koo and Sim, 1999; Fisher, 2001; Nehme, 2017; Pietsch and Messier, 2017; Amiruddin, 2019), leadership style (Kelley and Seller, 1982; Kelley and Margheim, 1990; Otley and Pierce, 1995; Somech, 2006; Dal Mas and Barac, 2018; [1] Ali et al., 2020), and type A behaviour (Fisher, 2001; Gundry and Liyanarachchi, 2007). For example, Sweeney and Summers (2002) investigate auditors' workload during busy seasons and find that increased workload leads to higher job burnout, which is a dysfunctional stress syndrome. Similarly, Persellin et al. (2019) show that auditors have to work more hours during peak seasons, leading to reduced audit quality and lower job satisfaction.

Additionally, previous studies also provide evidence that auditor stress leads to reduced audit-quality behaviours (Choo, 1995; Herrbach, 2001; Lord and DeZoort, 2001; Bedard et al., 2008; Jenkins et al., 2008; Sweeney et al., 2009; Yan and Xie, 2016; Smith et al., 2018; Amiruddin, 2019). When suffering stress, auditors may make errors in audit procedures, leading to lower-quality audit processes (Herrbach, 2001; López and Peters, 2012; Yan and Xie, 2016; Annelin and Svanström, 2021).

In the context of Vietnam, there have been studies that investigate accounting and auditing practices. For example, Le and Moore (2023) find a negative relationship between the cost of equity and earnings management in Vietnamese listed companies. Khanh and Nguyen (2018) provide evidence on determinants of real earnings management in companies audited by Big 4 firms and non-Big 4 firms. Tran et al. (2023) reveal a positive correlation between audit partner tenure and earnings management in

Vietnamese listed companies. However, to the best of our knowledge, no study investigates auditor stress and its impacts on reduced audit-quality behaviour. Built on previous studies (e.g., Kelley and Margheim, 1990; Koo and Sim, 1999; Fisher, 2001; Pierce and Sweeney, 2010; López and Peters, 2012; Svanström, 2016; Dal Mas and Barac, 2018; Amiruddin, 2019; Persellin et al., 2019; [1] Ali et al., 2020), this study hypothesis that the stress of auditors is related to workload and time pressure, role ambiguity and conflict, leadership style, and type-A behaviour. We also hypothesis that auditor stress is related to reduced audit-quality behaviours.

To find evidence, we survey 906 auditors who are working for auditing firms that are operating in Vietnam. The findings show that auditor stress is positively related to professional pressure (e.g., workload and time pressure) and leadership style but is negatively related to role ambiguity and conflict. However, we do not find evidence that type-A behaviour is related to auditor stress. Next, we find that auditor stress is related to reduced audit-quality behaviour. The findings are broadly consistent with our predictions.

We contribute to the literature in several ways. First, we document evidence of auditor stress and its determinants for the Vietnamese market, a developing country. Our findings are broadly consistent with previous studies (e.g., Kelley and Margheim, 1990; Koo and Sim, 1999; Fisher, 2001; Pierce and Sweeney, 2010; López and Peters, 2012; Svanström, 2016; Dal Mas and Barac, 2018; Amiruddin, 2019; Persellin et al., 2019; [1] Ali et al., 2020). Second, our study is related to but different from recent studies that use Vietnamese data such as Le and Moore (2023), Khanh and Nguyen (2018), Tran et al. (2023) and Pham et al. (2022). We are the first to examine the stress of auditors in Vietnam.

The research proceeds as follows. Section 2 provides a literature review and hypothesis development. Section 3 explains research methodologies while section 4 presents the results. Section 5 concludes our study.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Auditor stress, determinants and reduced quality reducing behaviour

Auditor stress

The field of auditing is renowned for its complexity and intense demands, particularly regarding the retention of high standards of quality and independence. Auditors contend with many stressors, from tight deadlines to expectations of professionalism and excellence. This pressure escalates significantly during audit season, as the workload increases while time and financial resources decrease (Coram et al., 2003; Pietsch and Messier, 2017; Amiruddin, 2019; Beau and Jerman, 2022). In this research, we define work stress as a set of physiological, psychological, and behavioural characteristics resulting from the impact of various factors on auditors in auditing firms (e.g., Yan and Xie, 2016). Previous studies document various factors that cause stress for auditors.

Workload pressure

Workload pressure is an important factor contributing to auditor stress (López and Peters, 2012; Pietsch and Messier, 2017; Persellin et al., 2019). The audit workload refers to reported working hours and the number of team members in an audit engagement (Sweeney and Summers, 2002; López and Peters, 2011, 2012; Persellin et al., 2019). Auditors face higher workloads due to extended working hours and increased job demands during peak times (busy seasons) compared to off-peak times (López and Peters, 2011, 2012; Christensen et al., 2021). Working long hours per day creates work stress and reduces productivity, even diminishing auditors' cognitive processes (see, e.g., Pietsch and Messier, 2017). Sweeney and Summers (2002) investigate auditors' workload during busy seasons and find that increased workload leads to higher job burnout, which is a dysfunctional stress syndrome. Similarly, Persellin et al. (2019) show that auditors have to work more hours during peak seasons, leading to reduced audit quality and lower job satisfaction.

López and Peters (2012) investigate clients of audit firms during busy seasons and find that those firms have higher abnormal accruals, an indicator of lower audit quality. López and Peters (2011) examine the concentration of audit workload toward the December year-end (e.g., workload compression) and find that it increases the probability that clients will switch auditors, suggesting that workload compression affects the auditor-client relationship. By focusing on team workload, Christensen et al. (2021) find that an increase in team workload leads to reduced audit quality, especially when team members have excessive

working hours (e.g., more than 60 hours per week) or have lower performance ratings. Overall, the literature shows that workload pressure affects auditor performance, evidenced by job burnout and low audit quality.

Time pressure

Time pressure is a significant issue that auditors face in their work (Kelley and Margheim, 1990; McDaniel, 1990; Glover, 1997; Coram et al., 2004; Gundry and Liyanarachchi, 2007; Pierce and Sweeney, 2010; Svanström, 2016; Bennett and Hatfield, 2017). This pressure arises from the need to complete tasks within limited timeframes, often due to constraints on resources and staffing or fee constraints in service delivery (Glover, 1997). Audit firms use time pressure as a control mechanism and planning tool, creating pressure on auditors to achieve job efficiency (McDaniel, 1990; Glover, 1997; Bennett and Hatfield, 2017). At the same time, pressure on auditors to maintain high-quality work under time constraints often leads to reduced audit quality. For example, McDaniel (1990) shows that audit performance decreases when time pressure increases. Glover (1997) finds that time pressure affects auditors' processing of non-diagnostic (irrelevant) information, thus affecting auditors' judgments. Braun (2000) indicates that time pressure influences auditors' attention to qualitative aspects of misstatements. In a recent study, Bennett and Hatfield (2017) provide evidence that time pressure influences auditors' assessments of materiality, e.g., when they are under pressure, they treat detected misstatements as less material. Accounting studies also document that time pressure has an impact on auditors' dysfunctional behaviours, such as accepting weak evidence or prematurely signing off on an audit procedure (Kelley and Margheim, 1990; Coram et al., 2004; Gundry and Liyanarachchi, 2007; Pierce and Sweeney, 2010; Svanström, 2016).

Role ambiguity and conflict

The role ambiguity and conflict in the auditing profession significantly impact auditors' stress levels (Bamber et al., 1989; Koo and Sim, 1999; Fisher, 2001; Amiruddin, 2019). According to Bamber et al. (1989), role conflict arises when auditors encounter conflicting demands, where fulfilling one demand makes it challenging or impossible to satisfy another. Role ambiguity occurs when there is a lack of clear guidance and policies, leading to uncertainty about authority, responsibilities, interactions with others, or the consequences of actions on sanctions and rewards. Previous studies show that auditors experience stress from role ambiguity and conflict in the workplace (Bamber et al., 1989; Koo and Sim, 1999; Fisher, 2001; Nehme, 2017; Pietsch and Messier, 2017; Amiruddin, 2019). For example, auditors experience stress due to conflicting demands to maintain audit quality and positive client relationships (Nehme, 2017; Pietsch and Messier, 2017). Lord and DeZoort (2001) also suggest that pressure to comply with social influence within auditing firms significantly increases the likelihood that auditors approve account balances that contain material misstatements.

Leadership style

Leadership style in the auditing industry also affects stress levels (Kelley and Seller, 1982; Kelley and Margheim, 1990; Otley and Pierce, 1995; Somech, 2006; Dal Mas and Barac, 2018; [1] Ali et al., 2020). Leaders play a crucial role in establishing organizational culture and creating a positive or negative work environment (Bass and Avolio, 1993). Wang et al. (2011) find that the task-oriented behaviours of the CEO are related to firm performance, while relationship-oriented behaviours are associated with employees' attitudes, which in turn influence firm performance. However, inappropriate leadership styles can impact reduced quality reducing behaviour and employee satisfaction (Schyns and Schilling, 2013; Li et al., 2023), and even lead to organizational dysfunction and the breakdown of functional connections between leaders and subordinates (Somech, 2006). Regarding the audit profession, leadership styles can influence adherence to auditing procedures and auditors' stress levels (Bamber et al., 1989; [1] Ali et al., 2020; Beau and Jerman, 2022). Specifically, authoritative leadership styles focused on high compliance can create a stressful environment for auditors to adhere to auditing standards and quality control procedures (Bamber et al., 1989; [1] Ali et al., 2020).

Type A behaviour Patterns

Individual characteristics, especially Type A behaviour patterns (TABP), can impact auditors' stress levels (Fisher, 2001; Gundry and Liyanarachchi, 2007). Type A behaviour patterns refer to consistent syndromes of behaviours used as a strategy to cope with stress in challenging environmental stimuli (Glass, 1977; Fisher, 2001). These syndromes of behaviours can include achievement striving, competitiveness, aggressiveness, irritability, time-urgency, and impatience (Glass, 1977), which manifest in stressful

situations (Fisher, 2001). Therefore, auditors with Type A behaviour patterns may experience more stress in similar stressful situations compared to non-Type A individuals (Fisher, 2001).

Auditor stress and reduced quality reducing behaviour

Stress within the auditing profession not only affects auditors' physical and mental well-being but also their reduced quality reducing behaviour. Research findings suggest that excessive stress levels can impair judgment and job quality in audit engagements (Choo, 1995; Herrbach, 2001; Lord and DeZoort, 2001; Bedard et al., 2008; Jenkins et al., 2008; Sweeney et al., 2009; Yan and Xie, 2016; Smith et al., 2018; Amiruddin, 2019). Under stress, auditors make errors in audit procedures, compromising the integrity of the audit process (Herrbach, 2001; López and Peters, 2012; Yan and Xie, 2016; Annelin and Svanström, 2021).

2.2. The context of the Vietnamese auditing profession

The rise of Vietnam in the global supply chain in recent years also makes this research interesting. Vietnam is one of the world's fastest-growing economies, with a GDP growth rate of 7.1% for the period 2016-2022 and 6.3% in 2023 (World Bank, 2023). As a key member of the Association of Southeast Asian Nations (ASEAN) - the world's fifth-largest economic zone with $3.6 trillion in 2022, Vietnam contributes significantly to the global economy (World Bank, 2021; ASEAN Secretariat, 2023). Additionally, Bloomberg (2021) suggests that Vietnam will play a crucial role in the global supply chain and may benefit from shifts in supply chain dynamics following the COVID-19 pandemic. Overall, the above evidence suggests that Vietnam is becoming an important country in the global supply chain.

The above context makes a study about the auditing profession in Vietnam interesting. In Vietnam, the government has mandated some important legal requirements for the accounting and auditing professions in recent years, including the Law on Independent Auditing (Congress of the Socialist Republic of Viet Nam, 2011), ethical standards for accountants and auditors (Vietnamese Ministry of Finance, 2015), and Circulars 200 and 202/2014/TT-BTC establishing new accounting requirements as a step towards aligning Vietnamese accounting standards with international standards (Vietnamese Ministry of Finance, 2014b, 2014a). These regulations have set standards and expectations for the auditing profession, especially for assurance (audit) services. Following regulatory guidance, auditing firms have made continuous efforts to improve service quality, comply with international auditing standards, and meet the increasing market demand.

However, like the entire Vietnamese economy, the auditing profession in Vietnam is experiencing rapid and challenging growth, particularly in the post-COVID-19 context and amid global financial market fluctuations. A fast growth rate creates many challenges for the independent auditing sector in Vietnam. According to the Ministry of Finance's 2023 report, significant changes have occurred in the auditing sector, including the number of auditing firms and the scale and structure of their clients. As of December 2023, there are 221 auditing firms with 165 branches, including 3 fully foreign-owned firms and 9 with foreign investment. Domestic firms account for 205 of the total, with 23 being members of international audit networks. Additionally, the Ministry of Finance's 2023 report indicates that in 2022, the sector served 64,770 clients, with notable increases in joint-stock companies (up 5.64%) and partnerships and private enterprises (up 80.21%). The number of clients that are subsidiaries of multinational companies and other organizations also rose significantly by 17.28%. Due to competition and the increasing demand for auditing services, an increased audit workload may reduce audit quality. Also, auditing firms may change their behaviours to meet conflicting expectations from clients and the profession.

Although prior studies have extensively explored various stressors impacting auditors in developed economies, limited research has specifically addressed auditor stress and its relationship with behaviors relating to reduced audit quality in the Vietnamese auditing context. This represents a significant research gap given Vietnam's unique cultural, regulatory, and economic environment, providing a compelling rationale to investigate these dynamics thoroughly in the current study.

2.3. Hypotheses

There has been increasing research that investigates the accounting and auditing profession in Vietnam. Le and Moore (2023) find a negative relationship between the cost of equity and earnings management in Vietnamese listed companies. Also using Vietnamese data, Khanh and Nguyen (2018) provide evidence on determinants of real earnings management in companies audited by Big 4 firms and non-Big 4 firms. Nguyen et al. (2023) provide evidence suggesting that despite nearly a decade passing

since the complete enforcement of the Law on Independent Audit (2011) in Vietnam, the audit and assurance sector in the country still copes with low audit quality, non-adherence to standards, and concerns regarding auditor independence, particularly among smaller audit firms. Ngo and Nguyen (2022) discover that chief executive officers possessing expertise in finance and accounting have a higher tendency to engage in earnings management. Their argument revolves around the notion that in the absence of rigorous legal consequences, CEOs with financial expertise have more opportunities to manipulate financial statements. On the same theme, Tran et al. (2023) reveal a positive correlation between audit partner tenure and earnings management in Vietnamese listed companies. They also find that the relationship is stronger for companies audited by non-Big Four auditors and those with chief executive officer-chairperson duality, indicating that deficient corporate governance may contribute to this relationship.

Overall, there is evidence suggesting that while the Vietnamese Government and the auditing profession have committed to providing the market with high-quality audit services, there are concerns that competition and increasing market demand may reduce audit quality. Surprisingly, there is limited research that investigates the auditing profession in Vietnam. Tran et al. (2023) and Pham et al. (2022) are among the few authors who conduct research using auditor-level data in Vietnam. To the best of our knowledge, the area of auditor stress and its determinants remains unexplored. We aim to fill this research gap by investigating auditor stress, its determinants, and its consequences for audit quality.

In the context of Vietnam, some studies are focusing on work-related stress. For example, Pham (2001) examines stress in management and finds a high level of stress among management personnel due to job demands, conflicts in relationships, and lack of internal cohesion. Vu and Phan (2016) explore the impact of emotional intelligence on stress in the workplace among accountants and demonstrate the importance of stress management and its impact on performance and work motivation. Recently, Pham et al. (2022) examine work pressure, job satisfaction, and auditor turnover, and they discover that auditors' decision to quit the audit profession is impacted by their attitudes towards the profession, working conditions, and environment. In general, we hypothesize that workload pressure is related to auditor stress in the Vietnamese market. We present our first hypothesis below.

Hypothesis H1: Workload pressure is related to auditor stress.

Next, time pressure in auditing engagements is expected to be a significant factor contributing to auditor stress. In developing countries like Vietnam, the convergence between local and international accounting and auditing standards has increased the quality of financial reporting and auditing (Barth et al., 2008; Hopper et al., 2017; Wijayana and Gray, 2019). As discussed above, the Vietnamese Government introduced regulations for the accounting and auditing profession, including deadlines to audit and publish financial statements of listed companies (Congress of the Socialist Republic of Viet Nam, 2011). Given that auditing firms have experienced a significant increase in the number of clients in recent years, auditors may experience stress due to pressure to meet deadlines from clients and regulators. Our second hypothesis is as follows:

Hypothesis 2: Time pressure is related to auditor stress.

Furthermore, role ambiguity and conflict are significant concerns. Wijayana and Gray (2019) explain that enforcement plays a very important role in determining accounting practices. Although the government has introduced regulations, the Vietnamese auditing profession still exhibits low audit quality, non-adherence to standards, and concerns regarding auditor independence, particularly among smaller audit firms (Nguyen et al., 2023). It implies that the auditing profession in Vietnam may lack guidance, policies, and enforcement, which leads to role ambiguity and conflict for auditors. Therefore, it is reasonable to expect that role ambiguity and conflict influence auditor stress.

Hypothesis 3: Role ambiguity and conflict are related to auditor stress.

Next, the literature documents that leadership style affects auditors' stress levels (Bamber et al., 1989; [1] Ali et al., 2020; Beau and Jerman, 2022). In the context of Vietnam, there is evidence that leadership style and accountability affect accounting practices (Tran et al., 2021b, 2021a). Previous research also finds that leadership style and organizational culture affect employees' job satisfaction in Vietnamese organizations (Tran, 2020). In Vietnam, accounting and auditing standards are not only professional guidance but also legal requirements because they are issued by the Ministry of Finance. Auditing firms, including Big Four firms, prioritize adherence to accounting and auditing standards when conducting the audit of financial statements in Vietnam. A compliance-focused leadership style can create a stressful

environment for auditors to comply with auditing standards and quality control procedures (Bamber et al., 1989; [1] Ali et al., 2020). Therefore, we hypothesize that leadership style is related to auditor stress in Vietnam. Our next hypothesis is as follows:

Hypothesis H4: Leadership style is related to auditor stress.

Next, similar to previous studies (Fisher, 2001; Gundry and Liyanarachchi, 2007), we expect that individual characteristics such as TABP can influence auditor stress. While there is no research on the relationship between TABP and individuals' stress in the Vietnamese market, we argue that auditors working in Vietnam are experiencing the same or similar issues. Auditors with syndromes of behaviours may experience more stress in stressful situations. This holds true when the Vietnamese market is internationalized and becomes an important player in the global supply chain. Our next hypothesis is as follows:

Hypothesis H5: Type A Behaviour Pattern is related to auditor stress.

Our last hypothesis is about the impact of auditor stress on reduced quality reducing behaviour in the Vietnamese market. The accounting literature shows that excessive stress levels can impair judgment and job quality in audit engagements (Choo, 1995; Herrbach, 2001; Lord and DeZoort, 2001; Bedard et al., 2008; Jenkins et al., 2008; Sweeney et al., 2009; Yan and Xie, 2016; Smith et al., 2018; Amiruddin, 2019). Similar to previous studies, we also hypothesise that auditor stress negatively impacts reduced quality reducing behaviour in the Vietnamese market. Our last hypothesis is as follows:

Hypothesis H6: Auditor stress negatively impacts reduced quality reducing behaviour.

3. RESEARCH METHODOLOGIES

3.1. Survey method

We use the survey method to collect data to test our hypotheses. The survey method stands out as the preferred method for gathering opinions from a specific group of experts on a topic of interest in a measurable manner - a goal that is notably challenging to achieve through alternative research methodologies (Lune and Berg, 2017; Maksymov et al., 2023). Previous studies also indicate that auditors' responses to surveys regarding their career experience are likely accurate (see, e.g., Kochetova-kozloski et al., 2011; Nelson and Skinner, 2013; Maksymov et al., 2023).

We follow recent accounting research (e.g., Dichev et al., 2013; Maksymov et al., 2023) to conduct a survey with different stages to cover key topics related to auditor stress. First, we developed seven key survey topics (workload press, time pressure, role ambiguity and conflict, leadership style, Type A behaviour, behaviours relating to reduced audit quality with 5 questions, and auditor stress) and drafted questionnaires based on a comprehensive literature review. These key topics can provide new insights into auditor stress in the Vietnamese market. Second, we sent the preliminary questionnaires to 24 experienced auditors with more than 3 years of working experience (audit partners and seniors) to obtain their feedback on our key topics and questions. Based on their feedback, we revised the questionnaires. After that, we sent the revised questionnaire to 8 different experienced auditors (independent from the previous 24 auditors) for further feedback. Third, after revising the questionnaire, we sent it to 70 auditors (from juniors to partners) for a pilot test. Collected responses are then analysed using Cronbach's Alpha and Exploratory Factor Analysis. Based on these analyses, we finalised the questionnaire. Fourth, we sent a questionnaire to 923 auditors to collect their views on the key topics of interest. The above procedure for the survey is quite standard and widely applied in accounting research (e.g., Dichev et al., 2013; Tran et al., 2021b; Maksymov et al., 2023; Nguyen et al., 2023).

Second, we sent the preliminary questionnaires to 24 experienced auditors with more than 3 years of working experience (audit partners and seniors) to obtain their feedback on our key topics and questions. Based on their feedback, we revised the questionnaires. After that, we sent the revised questionnaire to 8 different experienced auditors (independent from the previous 24 auditors) for further feedback. Third, after revising the questionnaire, we sent it to 70 auditors (from juniors to partners) for a pilot test.

3.2. Participants

We require participants must meet certain criteria to ensure their understanding and ability to accurately respond to the survey questions: (i) they are auditors at auditing firms listed in the Vietnamese Ministry of Finance's approved registry; (ii) they have an educational background of at least a university degree. We

sent the questionnaire to 923 auditors and received 907 responses (98.2%). We excluded one unsuitable response due to incomplete information, leaving a final sample of 906 valid responses for analyses.

One of the challenges with the survey method is that participants may not be comfortable to truthfully report their experiences regarding sensitive topics such as questions related to audit performance (Maksymov et al., 2023). Therefore, we strictly follow legal requirements to collect data and protect participants' confidentiality. Our procedure can also help auditors become more comfortable completing our questionnaire, ensuring that their responses reflect their career experience.

We present the participants' demographic statistics in Table 1. The statistics indicate that our sample is diversified in terms of gender, age, marital status, years of working experience, working position and employer type (Big Four versus Non-Big Four). For example, the data show that more than two-thirds of the participants are female auditors; most auditors are less than 40 years old and have less than 10 years of working experience. The data also indicates a good diversity in participants' working position, marital status and employer type. Overall, the statistics fairly represent the auditor population in Vietnam.

Table 1: Demographic statistics

Characteristics		Number of observations	Percentage (%)
Gender	Male	247	27,26
	Female	655	72,30
	Other	4	0,44
Age rage	20-30	539	59,49
	31-40	320	35,32
	41-50	39	4,30
	> 50	8	0,88
Marital status	Single	523	57,73
	Married	379	41,83
	Others	4	0,44
Years of working experience	< 5	580	64,02
	6-10	247	27,26
	11-15	49	5,41
	>15	30	3,31
Position	Junior	406	44,81
	Senior	387	42,72
	Director	84	9,27
	Partner	17	1,88
	Senior Partner	12	1,32
Auditing firm (employer) type	Big Four	87	9,60
	Non-Big Four	819	90,40
Total		**906**	**100**

3.3. Questionnaire and measures

Seven key topics of interest in the research are workload pressure, time pressure, role ambiguity and conflict, leadership style, Type A behaviour, audit quality, and auditor stress. Following previous studies, we design the survey questionnaire to measure workload pressure with 3 questions, time pressure with 3 questions, role ambiguity and conflict with 8 questions, leadership style with 10 questions, Type A Behavior Pattern with 9 questions, and behaviours relating to reduced audit quality with 5 questions. Auditor stress is measured by different aspects: physical, sleep, behaviour, emotional, and awareness.

The survey questionnaire was developed based on established scales from previous studies to ensure reliability and validity. Specifically, workload pressure was measured using three items adapted from López and Peters (2012) and Persellin et al. (2019). Time pressure was assessed with three items following Kelley and Margheim (1990) and Bennett and Hatfield (2017). Role ambiguity and conflict were measured using eight items adapted from Bamber et al. (1989), Koo and Sim (1999), and Fisher (2001). Leadership style was evaluated through ten items based on scales developed by Otley and Pierce (1995) and Dal Mas and Barac (2018). Type A behavior was measured with nine items adapted from Fisher (2001)

and Gundry and Liyanarachchi (2007). Behaviors relating to reduced audit quality were assessed with five items sourced from Herrbach (2001) and Yan and Xie (2016).

Auditor stress was measured comprehensively across five dimensions: physical, sleep, behavior, emotional, and awareness. Each dimension was evaluated using specific items adapted from Yan and Xie (2016) and previous psychological stress measurement scales commonly used in auditing research. All survey items employed a five-point Likert scale, ranging from "1 = strongly disagree" to "5 = strongly agree." The detailed questionnaire and specific item statements are presented in the appendix.

3.4. Empirical model

To provide evidence for hypotheses on factors that influence auditor stress, we run OLS regression as follows:

$$Auditor\_Stress = \alpha + \beta_1 * SMH\&XD + \beta_2 * HVLD + \beta_3 * HVLA + \beta_4 * ALCV + \beta_5 * ALTG + \varepsilon \quad (1)$$

where Auditor_Stress stands for auditor stress, SMH&XD stands for role ambiguity and conflict, HVLD stands for leadership style, HVLA stands for type-A behaviour, ALCV stands for Workload pressure, and ALTG stands for Time pressure.

Next, to provide evidence for the relationship between auditor stress and reduced audit quality behaviour (REAQ), we run the following OLS regression:

$$REAQ = \alpha + \beta_1 * Auditor\_Stress + \varepsilon \quad (2)$$

where REAQ stands for reduced audit quality behaviour.

The hypotheses developed in this study directly reflect the theoretical discussions outlined earlier. Each hypothesis targets specific factors identified from literature as critical determinants of auditor stress and its subsequent effects on behaviors relating to reduced audit quality. The empirical model thus operationalizes these hypotheses by clearly specifying the independent variables (workload pressure, time pressure, role ambiguity and conflict, leadership style, and Type A behavior) and their expected relationships with auditor stress, providing a structured framework to empirically test these relationships in the Vietnamese context.

4. FINDINGS

4.1. Descriptive statistics

Table 2 provides descriptive statistics of the key variables of interest. The statistics show that ALCV and ALTG have a mean (median) of 3.73 (4) and 4.14 (4.33), respectively, indicating that auditors experience workload pressure and time pressure. Next, the variable SMH&XD has a mean and median of 3.79 and 3.86, respectively. The statistics suggest that auditors have experience with role ambiguity and conflict. Additionally, auditors work in an environment where leadership style is prominent (the mean and median of HVLD are 3.37 and 3.4, respectively). Similarly, we find that HVLA is common, with a mean (median) of 3.53 (3.5). In terms of stress levels, we find that auditors in Vietnam experience moderate levels of stress, given that the variable Auditor_stress has a mean and median of 3.26 and 3.2, respectively. Lastly, the mean and median of REAQ are 2.47 and 2.4, indicating that reduced audit-quality behaviour exists in the Vietnamese market but is at an average level.

Table 2: Descriptive statistics

Variables	MEAN	MEDIAN	MIN	MAX	RANGE	STD
ALCV	3.73	4.00	1.00	5.00	4.00	0.82
ALTG	4.14	4.33	1.00	5.00	4.00	0.74
SMH&XD	3.79	3.86	1.00	5.00	4.00	0.58
HVLD	3.37	3.40	1.00	5.00	4.00	0.54
HVLA	3.53	3.50	1.38	5.00	3.63	0.65
Auditor_Stress	3.26	3.20	1.00	5.00	4.00	0.92
REAQ	2.47	2.40	1.00	5.00	4.00	1.02

4.2. Reliability and validity test

We follow previous studies (Bland and Altman, 1997; DeVellis and Thorpe, 2021; Farghaly et al., 2023) to use Cronbach's Alpha to assess the internal consistency as the reliability of the constructed

measures. Table 3 presents the findings of reliability and reliability tests. The statistics show that all Cronbach's Alpha of all measures fall within the acceptable range between 0.70 to 0.95 (Bland and Altman, 1997; Le, 2011; DeVellis and Thorpe, 2021).[1] The statistics also indicate that item-total correlation coefficients are high[2] and significant at the 1% level.

Table 3: Reliability and validity statistics

Variables	Cronbach's Alpha	Factors	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation
ALCV	0.768	ALCV1	7.7792	2.826	0.581
		ALCV2	7.351	2.716	0.722
		ALCV3	7.2715	3.46	0.516
ALTG	0.672	ALTG1	8.2163	3.213	0.321
		ALTG2	8.3057	2.217	0.58
		ALTG3	8.3168	2.294	0.576
SMH&XD	0.887	SMH&XD1	15.883	7.438	0.731
		SMH&XD2	15.8499	7.54	0.754
		SMH&XD3	15.798	7.834	0.767
		SMH&XD4	15.7461	7.905	0.703
		SMH&XD5	15.8488	7.969	0.684
HVLD	0.905	HVLD1	21.5442	19.126	0.665
		HVLD2	21.5927	18.297	0.774
		HVLD3	21.8212	18.587	0.731
		HVLD4	21.8102	17.511	0.798
		HVLD5	21.8157	18.615	0.674
		HVLD6	21.9084	18.315	0.717
		HVLD7	21.9448	19.186	0.661
HVLA	0.838	HVLA1	24.7119	21.041	0.49
		HVLA2	24.5905	21.25	0.473
		HVLA3	24.4625	21.265	0.599
		HVLA4	24.6269	20.179	0.7
		HVLA5	24.8322	20.184	0.579
		HVLA6	24.8135	21.093	0.632
		HVLA7	24.3731	21.319	0.545
		HVLA8	25.011	21.403	0.564
Auditor_Stress	0.836	StressCT	12.0629	15.067	0.642
		StressGN	12.8289	12.847	0.627
		StressHV	13.8477	14.602	0.661
		StressCX	12.2815	13.661	0.663
		StressNT	14.1755	14.909	0.628
REAQ	0.911	PTHQ-CLKT1	9.7781	16.794	0.761
		PTHQ-CLKT2	9.4205	19.174	0.585
		PTHQ-CLKT3	9.9724	16.272	0.834
		PTHQ-CLKT4	10.0938	16.025	0.871
		PTHQ-CLKT5	10.0905	16.261	0.828

4.3. Exploratory Factor Analysis (EFA) analysis results

[1] Le (2011) suggests that the Cronbach's Alpha should be greater than 0.6 in the Vietnamese markets.
[2] Le (2011) suggests that the correlation coefficients should be greater than 0.3.

In addition to Cronbach's Alpha, we follow Stefanescu (2021) and use Exploratory Factor Analysis (EFA) to examine the reliability of constructed measures. We apply EFA to all independent variables and separate categories of factors. The purpose of EFA analysis is to identify principal components (factors) that help to explain the majority of variance. We use the Varimax factor rotation to identify principal components (factors) Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Bartlett's test of sphericity to examine the approach's suitability and validity.

We run principle component analysis by using Kaiser rule and the screen test that is applied to the overall variables' set (Stefanescu, 2021). As reported in Table 5, the statistics show that there are 4 out of 24 component factors with eigenvalues greater than 1. The four principal component factors explain 61.33% of the total variance. We also run the same analysis on each category of factors and find that on average the main components can explain about 62.32% of total variance. In Table 5, we report the rotated component matrix. The table shows that the factor loading coefficients are all greater than 0.50 (ranging from 0.549 to 0.854), suggesting that these measures are representative of the factors they measure.

Table 4: Component analysis – model summary

Total variance explained

			Initial eigenvalues		
Component		Label/category	Total	% of Variance	Cumulative (%)
Overall factors	1	*HVLD*	7,454	31,059	31,059
	2	*HVLA*	3,292	13,715	44,773
	3	*SMH&XD*	2,232	9,299	54,073
	4	*ALNN*	1,742	7,260	61,333
Each category of factors	1	*HVLD*	4,467	63,810	63,810
	2	*HVLA*	3,827	47,835	47,835
	3	*SMH&XD*	3,454	69,079	69,079
	4	*ALCV*	2,058	68,600	68,600
	5	*ALTG*	1,821	60,714	60,714

Note: Extraction method: principal component analysis

Table 5: Rotated component matrix

	Component								
	1	2	3	4		1	2	3	4
HVLD4	***.841***	.018	.219	-.044	HVLA7	.034	***.589***	.251	.153
HVLD2	***.818***	.143	.173	.076	HVLA1	.094	***.549***	.110	.201
HVLD3	***.803***	.125	.113	.028	SMH&XD2	.310	.094	***.783***	.070
HVLD1	***.750***	.102	.119	.115	SMH&XD3	.292	.177	***.773***	.059
HVLD6	***.749***	.152	.212	-.020	SMH&XD1	.282	.151	***.766***	.030
HVLD7	***.711***	.132	.186	-.019	SMH&XD4	.196	.217	***.754***	.052
HVLD5	***.684***	.091	.318	-.005	SMH&XD5	.180	.214	***.747***	.109
HVLA6	.038	***.790***	.057	.029	ALCV2	-.030	.099	.033	***.854***
HVLA4	.048	***.780***	.241	.079	ALTG2	.026	.030	.107	***.813***
HVLA8	.136	***.712***	.043	.025	ALCV1	.035	.095	-.153	***.738***
HVLA5	.200	***.698***	.011	.059	ALTG3	.052	.090	.097	***.724***
HVLA3	.193	***.621***	.328	.111	ALCV3	.006	.210	.203	***.661***

Note: Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalisation

Table 6 presents findings from the Kaiser-Meyer-Olkin (KMO) and Bartlett tests. The results show that the KMO coefficient is equal to 0.897, which falls between 0.5 and 1 as expected (Stefanescu, 2021), suggesting that variables are suitable for EFA analysis. Also, the results of Bartlett's Test of Sphericity show a 1% significance level, confirming the reliability of constructed variables. Overall, the EFA analysis results show that the constructed measures are reliable predictors of auditor stress.

Table 6: Tests for adequacy and reliability of PCA analysis

KMO measure		Bartlett's test		
	Sampling adequacy	Approx. chi-square	Df.	Sig.
Overall factors	0,897	11268,297	276	0,000
HVLD	0,889	3755,583	21	0,000
HVLA	0,870	2334,001	28	0,000
SMH&XD	0,853	2463,292	10	0,000
ALNN	0,793	1712,441	10	0,000

The above analyses lead us to eliminate two scales namely ALTG1 and HVLA2 because they did not meet the conditions of the EFA analysis. Because two factors affecting auditor stress are Work Pressure (ALCV) and Time Pressure (ALTG) converging into one factor, we convert these two factors into a new factor and named it "Professional Pressure" (ALNN). Thus, after EFA analysis, four independent factors affecting auditor stress are identified including Professional Pressure; Role Ambiguity and Conflict, Leadership Style, and Type A Behaviour.

In addition to confirming that auditor stress manifests in five distinct dimensions (physical, sleep, behavior, emotional, and awareness) our exploratory factor analysis (EFA) further verifies the robustness of these constructs, as evidenced by factor loadings exceeding 0.50, a Kaiser–Meyer–Olkin (KMO) statistic of 0.897, and a significant Bartlett's test of sphericity at the 1% level. Given that Selye's scale is widely accepted in global psychology and has demonstrated universal reliability, we did not perform a separate EFA on this particular instrument. Instead, we integrated relevant Selye-based items into our specialized set of indicators pertinent to the auditing context. This approach underscores the rigor of our study, ensuring that the measurement of auditor stress is both theoretically sound and empirically validated.

4.4. Multiple regression analysis results

4.4.1. Determinants of auditor stress

In the next stage of our empirical analysis, we test the proposed model by using the OLS regression analyses. Table 7 presents the regression analysis results for equation 1 (Panel A) and 2 (Panel B).

Table 7: Regression analysis results

	Coefficient	t-statistics	VIF factor
Panel A: Determinants of auditor stress			
SMH&XD	-0.407***	-6.087	1.761
HVLD	0.210***	3.056	1.614
HVLA	0.036	0.661	1.463
ALNN	0.341***	8.449	1.114
Constant	2.648***	11.144	
Observations	906		
Adjusted R2	0.101		
F-statistics	23.666***		
Durbin-Watson's statistics	1.895		
Panel B: Auditor stress and reduced quality reducing behaviour			
Auditor_Stress	0.373***	10.837	1.000
Constant	1.251***	10.727	
Observations	906		
Adjusted R2	0.113		
F-statistics	117.442***		
Durbin-Watson's statistics	1.912		

In Panel A of Table 7, we find that the coefficient on SMH&XD is negative and statistically significant at the 1% level (coef. = -0.407 and t-statistics = -6.087). The finding suggests that role ambiguity and conflict reduce auditor stress (Hypothesis 3). In other words, when there is a lack of clear guidance and policies, leading to uncertainty about authority, responsibilities, and interactions with others, auditors in Vietnam experience a lower level of stress. While the result is not in line with previous studies (Nehme, 2017; Pietsch and Messier, 2017), it could be explained by the Vietnamese working environment and

culture. In traditional Vietnamese work environments, where internal relations and communication between superiors and subordinates are shaped by a culture of respect and dependence, auditors may accept ambiguity or conflict without feeling overly stressed, reflecting a more composed attitude towards uncertain situations. The post-pandemic shift in career perspectives may have driven many young auditors to seek flexibility, creativity, and work-life balance over traditional stability. Additionally, another explanation could be the positive role of stress. Not all types of stress negatively impact individuals. Previous researchers have shown the positive role of stress (Folkman, 2008; Liu et al., 2019). When experiencing positive stress, auditors can enhance their concentration, have higher energy levels, and achieve a greater sense of accomplishment when facing manageable and rewarding challenges. Positive stress can even motivate innovation, helping auditors make suitable improvements to auditing processes and procedures to enhance performance and efficiency (Smith et al., 2020). Overall, the finding shows that role ambiguity and conflict are related to auditor stress.

Next, Panel A of Table 7 shows that the coefficient on HVLD is positive and statistically significant (coef. = 0.210 and t-statistics = 3.056). The finding indicates that leadership style is positively related to auditor stress. The result is consistent with previous studies that suggest that leadership styles influence adherence to auditing procedures and auditors' stress levels (e.g., Bamber et al., 1989; [1] Ali et al., 2020; Beau and Jerman, 2022). Overall, the evidence supports our hypothesis (Hypothesis 4).

Furthermore, we find that the coefficient the coefficient on ALNN is positive and statistically significant (coef. = 0.341 and t-statistics = 8.449). The finding indicates that professional pressure, which includes workload pressure and deadline pressure, is positively related to auditor stress. The finding is consistent with previous studies that heavy workload and strict deadlines lead to auditor stress which in turn may reduce audit quality (Kelley and Margheim, 1990; McDaniel, 1990; Glover, 1997; Coram et al., 2004; Gundry and Liyanarachchi, 2007; Pierce and Sweeney, 2010; López and Peters, 2012; Svanström, 2016; Bennett and Hatfield, 2017; Pietsch and Messier, 2017; Persellin et al., 2019). The evidence supports our hypothesis (Hypothesis H1 and H2).

Lastly, Panel A of Table 7 shows that the coefficient on HVLA is positive but not significant. Overall, we do not find evidence for the relationship between Type-A behaviour and auditor stress (Hypothesis H5).

4.4.2. Auditor stress and reduced audit-quality behaviour

Panel B of Table 7 provides evidence for the equation (2). Consistent with our hypothesis, we find that the coefficient on Auditor_Stress is positive and statistically significant at 1% (coef. = 0.373 and t-statistics = 10.837). The evidence indicates that auditor stress is positively related to reduced audit-quality behaviours. The result is broadly consistent with previous studies that when auditor stress increases, there may be errors in audit procedures, leading to a compromised audit process (Herrbach, 2001; López and Peters, 2012; Yan and Xie, 2016; Annelin and Svanström, 2021). Overall, the evidence supports our hypothesis (Hypothesis H6).

5. CONCLUSION

In this paper, we investigate auditor stress and its impacts on reduced audit-quality behaviour. We collected data by surveying 906 auditors. Our findings indicate that auditor stress is positively associated with professional pressure (such as workload and time pressure) and leadership style, while it is negatively associated with role ambiguity and conflict. However, we did not find evidence linking Type A behaviour to auditor stress. Additionally, our results show that auditor stress is related to reduced audit-quality behaviour.Our study contributes to the literature in several ways. Firstly, we provide evidence of auditor stress and its determinants in the Vietnamese market, a developing country, with findings consistent with previous studies (e.g., Kelley and Margheim, 1990; Koo and Sim, 1999; Fisher, 2001; Pierce and Sweeney, 2010; López and Peters, 2012; Svanström, 2016; Dal Mas and Barac, 2018; Amiruddin, 2019; Persellin et al., 2019; Ali et al., 2020). Secondly, our research is related to but distinct from recent studies using Vietnamese data (Khanh and Nguyen, 2018; Pham et al., 2022; Le and Moore, 2023; Tran et al., 2023). We are the first to investigate auditor stress in Vietnam.

Our data analysis indicates significant variations in auditor stress based on demographic factors such as gender and job position. Specifically, female auditors reported higher stress levels compared to their male counterparts, potentially due to additional social or familial responsibilities. Furthermore, auditors holding managerial positions experienced notably higher stress levels compared to junior staff,

likely attributable to greater responsibilities and decision-making pressures. These findings highlight the necessity of tailored stress management interventions to support diverse auditor groups effectively.

Based on the findings, organizations should implement specific stress management strategies including providing adequate resources and training in stress management skills, creating supportive organizational cultures, and ensuring balanced workloads to alleviate professional pressure among auditors. Regulatory bodies should consider incorporating psychological well-being criteria into professional standards to support auditors' mental health effectively.

The regression results show that the R^2 values of the specific research models are $R^2 = 0.101$ for the stress model and $R^2 = 0.113$ for the audit quality model. The R^2 value is not really high in the stress model mainly because the current research model does not fully include factors that can affect auditors' stress, such as organizational culture, working environment (especially in the post-COVID-19 context), geographical factors, and unique characteristics of the auditing profession (pressure from customers, regulatory agencies, compliance with new standards, etc.). Similarly, the current audit quality model only considers the stress factor, a single psychological factor, while in reality, audit quality is affected by many other factors such as professional competence, internal quality control system, market pressure, corporate governance mechanism. Furthermore, this is the first study in Vietnam to directly examine the relationship between auditing professional characteristics and auditors' psychological issues. In the absence of previous studies in this field in Vietnam, the selection and construction of initial research variables were mainly based on international studies that may not fully reflect the specific factors in Vietnam. In addition, the survey and analysis methods were conducted in a systematic and scientific manner, strictly following the steps of scale verification (Cronbach's Alpha, EFA), collecting and processing data in accordance with social science research standards. Therefore, although the R^2 value is not high, the research results are still reliable and ensure statistical significance, clearly demonstrating the important relationship between auditing professional characteristics and auditors' psychology.

Future research should explore additional factors influencing auditor stress, such as organizational culture, geographic differences, and the impact of the post-COVID-19 environment. Moreover, employing mixed-method approaches, including qualitative interviews and case studies, could provide deeper insights into auditor stress and audit quality.

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CĂNG THẲNG CỦA KIỂM TOÁN VIÊN ẢNH HƯỞNG ĐẾN CHẤT LƯỢNG KIỂM TOÁN: NGHIÊN CỨU TẠI CÁC CÔNG TY KIỂM TOÁN VIỆT NAM

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Tóm tắt. Nghiên cứu này nhằm xác định các yếu tố ảnh hưởng đến căng thẳng của kiểm toán viên và tác động của căng thẳng kiểm toán viên đối với hiệu suất công việc. Dữ liệu được thu thập từ 906 kiểm toán viên đang làm việc tại các công ty kiểm toán tại Việt Nam. Thiết kế nghiên cứu áp dụng phương pháp phân tích nhân tố khám phá (EFA) và phân tích hồi quy nhằm đảm bảo tính tin cậy và giá trị của kết quả nghiên cứu.

Kết quả cho thấy căng thẳng của kiểm toán viên có mối quan hệ thuận chiều với áp lực nghề nghiệp (bao gồm khối lượng công việc và áp lực thời gian) cũng như phong cách lãnh đạo. Ngược lại, căng thẳng kiểm toán viên có quan hệ nghịch chiều với sự mơ hồ và xung đột vai trò. Tuy nhiên, nghiên cứu không tìm thấy bằng chứng cho thấy hành vi loại A có ảnh hưởng đến căng thẳng của kiểm toán viên. Ngoài ra, căng thẳng kiểm toán viên có mối liên hệ với hành vi làm suy giảm chất lượng kiểm toán.

Nghiên cứu này mang lại giá trị thực tiễn cho các nhà quản lý, đặc biệt là ban lãnh đạo các công ty kiểm toán. Việc hiểu rõ căng thẳng của kiểm toán viên và tác động của nó đối với hiệu suất công việc sẽ giúp các công ty kiểm toán xây dựng môi trường làm việc và chính sách hỗ trợ phù hợp. Đây cũng là nghiên cứu đầu tiên cung cấp bằng chứng thực nghiệm về căng thẳng kiểm toán viên và tác động của nó đến hiệu suất công việc trong bối cảnh thị trường Việt Nam.

APPENDIX

Variable definitions

Variable	**Definition**
ALCV	Workload pressure
ALTG	Time pressure
SMH&XD	Role ambiguity and conflict
HVLD	Leadership style
HVLA	Type-A behaviors
Auditor_Stress	Auditor stress
REAQ	Reduced audit quality behaviour
ALNN	Professional pressure

Ngày gửi bài: 28/2/2025
Ngày nhận đăng: 24/6/2025