



# **The impact of the auditor's professional assurance on climate change disclosure on Firm Value: evidence from Egypt -An experimental study**

**Research extracted from a PHD. thesis of accounting**

*By*

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## **The impact of the auditor's professional assurance on climate change disclosure on Firm Value: evidence from Egypt -An experimental study**

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### **Abstract:**

**Purpose:** This study aims to examine the impact of the auditor's professional assurance on climate change disclosure on firms value of firms listed on the Egyptian Stock Exchange. It also examines the impact of some moderating variables, such as the type of assurance provider and the level of experience and academic qualification of the investor, on the relationship between auditor's professional assurances on climate change disclosure and firms value.

**Design/ Methodology:** To achieve the research objective, the research analyzes previous studies presented by the accounting literature in the field of climate change disclosure, in order to benefit from scientific contributions. Then, the researcher uses the deductive approach to crystallize the impact of the auditor's professional assurance on climate change disclosure on the firm's value, as well as the impact of the type of assurance provider and the level of experience and academic qualification of the investor on the relationship between the auditor's professional assurance on firms' disclosure of climate change and the value of the firms, then formulating the research hypotheses, and testing this relationship through experimental study. Regarding the experimental study, the research hypotheses will be tested by conducting on a sample of stock investors in brokerage firms and securities trading firms, and arriving at results that achieve the research objective.

**Findings:** These results of experimental study conclude that there is a positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value. The level of climate change disclosure is influenced by the financial statements audited by Big four companies, which boosts investor confidence and the firm value. Therefore, the relationship between climate change disclosure and firm value may change depending on the type of assurance provider. Finally, the

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study concluded that there is a significant impact of the level of experience and educational qualification on the investment decision or on the relationship between the disclosure of information related to climate change and the decision to invest in stocks (firm value).

**Originality/ Value:** This study contributes to the accounting literature by analyzing the relationship between auditor's professional assurance on climate change disclosure and firm value and measuring the impact (the type of assurance provider and the level of experience and academic qualification of the investor) on the nature of this relationship in the Egyptian business environment.

**Keywords:** Professional Assurance, Climate Change Disclosure (DCC) firm Value, Stock Prices ,Type of Assurance Service Provider, Experience and Qualification Level of Investor.

## **Introduction:**

There is increasing pressure from stakeholders and users of financial reports to verify the reliability and accuracy of the information included in climate change disclosures, which represents a challenge for the auditing profession. In this context, what is known as non-traditional professional assurance services has emerged, which are assurances other than the limited audit and examination of historical financial statements, which is the case with the assurance of climate change disclosures (Muhammad, 2020).

Also, if there is a tendency toward increasing accounting transparency by disclosing information about climate change and other topics, these disclosures must be believable in the eyes of an impartial auditor who helps to verify the disclosures' newsworthiness. According to the study (Dutta, P. & Dutta, A., 2020), firms' disclosures of climate change and related risks are positively impacted by external audit assurance.

### **1.1 Research problem:**

External assurance of climate change disclosures involves having an independent third party verify the accuracy and completeness of the climate-related information provided by a firm. This assurance enhances the credibility of the disclosures and builds trust among stakeholders. Also, firms that participate in external assurance of climate-related disclosures can demonstrate their commitment to transparency and sustainability, which may enhance their reputation (Dutta & Dutta , 2020).

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The type of assurance provider enhances the perceived reliability of climate-related disclosures, which in turn has a stronger impact on investment decisions. So the study of (Hoque & Irfan, 2025) analyze the role of auditors at the Big 4 in mitigating climate risks at the firm level. The study finds that auditors at these companies contribute to mitigating climate risks because they can be a source of material errors in annual reports, and because there is increasing pressure from investors on auditors to incorporate climate risks.

Some studies such as (Gal & Akisik, 2020) agree that the decision to invest in stocks is a function of many factors related to the firm, the industry, the country, or the investor himself. The investment decision is influenced by the investor's characteristics, such as his experience and level of educational qualifications, which in turn influences his personal judgment and, consequently, his decision. The difference in experience level among investors affects their perception and understanding of the information content of climate change reports, leading to variations in their decision to invest in the same firm's stocks. This is due to differences in their evaluation of the firm's stocks. Experienced and inexperienced investors react differently to climate change disclosures, with experienced investors reacting more quickly and more effectively.

## **1.2 Research objective:**

The primary objective of the research is to study and analyze impact of the auditor's professional assurance on climate change disclosure on firms value and testing the type of assurance provider and the level of experience and academic qualification of the investor, on the relationship between auditor's professional assurances on climate change disclosure and firms value.

## **1.3 Research Importance:**

This study comes in line with both the National Climate Change Strategy in Egypt 2050, which aims to address the negative impacts and repercussions of climate change, and Egypt Vision 2030 with its eight goals, especially the fifth goal, "Environmental Sustainability," which seeks to achieve an integrated and sustainable ecosystem, and the guiding principles for sustainable financing issued by the Central Bank in 2021, which include managing climate change risks and working to reduce them in an effort to finance more sustainable economic activities.

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#### **1.4 Research method:**

The research analyzes previous studies presented by the accounting literature in the field of climate change disclosure, in order to benefit from scientific contributions by using the inductive deductive. Then, the researcher uses the deductive approach to crystallize impact of the auditor's professional assurance on climate change disclosure on firms value, as well as the impact of type of assurance provider and the level of experience and academic qualification of the investor, on the relationship between auditor's professional assurances on climate change disclosure and firms value.

#### **1.5 Concept of the professional assurance service on climate change disclosures:**

The International Auditing and Assurance Standards Board (IAASB) published the International Standard on Assurance Engagements Other than Audits and Reviews of Historical Information (ISAE 3000) in 2013. It states that a professional assurance service is one in which the auditor obtains enough relevant evidence to draw conclusions about the scope of the engagement by measuring and evaluating the scope of the engagement against suitable measurement criteria. This helps to support the confidence of intended users, who are not the responsible party, regarding the content of the scope of the engagement.

In order to improve the quality of the information and its production environment, the professional assurance service also seeks to obtain reasonable assurance regarding whether the information pertaining to the assignment area is free of material errors. Additionally, it seeks to express a conclusion regarding the results of measuring or evaluating the assignment area through a written report, according to appropriate and specified measurement criteria, where the conclusion is communicated to the intended user (IAASB , 2013).

#### **1.6 Study the efforts of professional publications in assurance services towards climate change disclosure:**

Assurance Engagements on Greenhouse Gas Statements, Standard IASE 3410, was published by the International Auditing and Assurance Standards Board. As part of the sustainability report or an independent report on greenhouse gases, the standard seeks to obtain reasonable assurance on greenhouse gas emissions statements, where the auditor performs professional assurance on it as a certification service aimed at

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producing positive assurance. Its scope includes management's assurances regarding actual emission rates compared to maximum rates, disclosure of greenhouse gases, and compliance with the firm's laws, regulations, and mandatory agreements. (EL Malah, 2020).

The auditor provides professional assurance on the information in the general sustainability report and the social responsibility report, as well as the extent of confirming management's claims regarding the sustainability program plan, the integrity of connecting sustainability to the firm's strategy and business model, the integrity of measuring and disclosing sustainable performance, and fulfilling social responsibility and abiding by social regulations and laws. This is in reference to the Egyptian Standard No. 3000 audits international counterpart IASE 3000, entitled "Assurance Engagements Other than Audits and audit of Historical Information," which applies to reports other than annual financial reports (Gonim,2017).

According to International Auditing Standard No. 315, which was revised in 2019, and its Egyptian counterpart, No. 315, "Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement," the auditor may take into account the effects of climate change and its risks in order to identify and understand the nature of the company and its surroundings. The following must be known by the auditor (IASSB, 2020):

- If the disclosure of climate change and associated risks has affected or will affect the company's supply chain and business model.
- Important industrial factors that affect climate change disclosure include the industry type, the competitive environment, supplier and customer relationships, and technological developments.
- Regulatory factors are the laws, regulations, and policies that significantly affect the extent of disclosure of climate change and associated hazards in the firm's environment.

As a result, there may be significant repercussions and errors when climate change and associated hazards are revealed in light of other factors. Therefore, when performing risk assessment procedures, the external auditor needs to take these factors into account. According to the study's findings (Li et al., 2019), these risks may become "material," require disclosure, and be taken into account by auditors when they audit financial reports due to a number of external factors, such as the industry and investor expectations.

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In compliance with **International Auditing Standard (IAS 260) Communication with People Charged with Governance (Revised)**, the auditor is required to communicate with those responsible for governance. In order for him to express his views on the important qualitative elements of the facility's accounting procedures, such as accounting policies, accounting estimates, and disclosure in the financial statements for the firm affected by climate change, there may be climate-related risks that affect the financial aspects of the business. These communications may discuss whether accounting rules are appropriate for the specific circumstances of the company, taking into account the requirement to balance the potential benefits for consumers of the firm's financial statements with the cost of giving information. It may also be essential to learn about the accounting procedures used by a similar business in similar circumstances.

Concerning the **International Auditing Standard (IAS) (570 Going Concern (Revised))**. It discusses the auditor's responsibility to review the financial statements of a running company and the ramifications of their conclusions. According to the guideline, if events and behaviors are discovered that might seriously raise questions about the auditor's professional skepticism or the firm's sustainability. To address any concerns he may have, the auditor must collect evidence. The auditor consequently wonders if the company can withstand the consequences of climate change due to the risk involved. For example:

- Weather-related incidents may have a bigger effect than in the past and may affect whether the company should stay in operation.
- Some companies risk being sued for the environmental harm they do, which could affect their ability to continue operating under their current economic model in the future.

The auditor must provide an opinion on whether the financial statements are prepared in all material respects in accordance with applicable accounting standards in relation to the Egyptian standard (700) and its equivalent, the international auditing standard (ISA 700) (Forming an Opinion and Reporting on Financial Statements (Revised)). The auditor's judgment must be based on whether there are any material misstatements in the financial statements overall, whether they were the result of fraud or error, and whether financial reports include all climate-related risks and any financial impact resulting from climate change. In light of the auditor's findings, the International Standard on Auditing (ISA 450) mandates that the auditor consider

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whether climate-related risks, either separately or collectively, are minor or could lead to material misstatements (if left uncorrected). These dangers could consist of the following:

- **Appropriateness or adequacy of disclosures** ,For instance, the company might not have sufficiently disclosed the impact of climate-related risks in the financial statements, even if these disclosures are likely to have an impact on the decisions made by those who use the financial statements.
- **Application of the firm's accounting policies**, for instance, improper asset measurement and identification due to the associated impairment calculations' inadequate consideration of the effects of climate-related hazards.
- The auditor must amend the audit report's opinion in line with the International Standard on Auditing (ISA 705) Modifications to the Opinion in the Independent Auditor's Report (Revised) if, after considering the audit evidence, they determine that the financial statements as a whole contain material misstatements.

Regarding Using the Work of an Auditor's Expert (**ISA 620**), the International Standard on Auditing, the auditor uses an expert. The auditor may choose to hire a specialist to research the substantial risks associated with climate change. This necessitates using specialist skills or expertise to adequately detect and evaluate the risks of material misstatement or to identify future hazards in order to identify climatic consequences or potential/expected risks of climate change.

The auditor must gather enough and relevant audit evidence before voicing an opinion if the experience is in a subject other than accounting or auditing. As a result, the auditor must decide whether to employ a climate specialist or not. For instance, the auditor may employ expert work to help determine the recognized provision for plant decommissioning or repair of environmental harm caused by climate change while conducting audit engagements for an organization involved in extractive industries.

Therefore, the auditor must study and assess it in line with International Auditing Standard 720 and its Egyptian counterpart, 720, to ensure that the financial and non-financial information disclosed outside of the financial reports is consistent with the financial reports. The auditor must take into account information about climate



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change, its risks, and its effects on the financial statements because it is disclosed outside the scope of the financial reports. This is because it could show that there are errors or significant distortions in the financial statements or other information, or that there is a serious contradiction between other information and the financial reports (IASSB, 2020).

In order to identify and appropriately assess the risks of significant, material, and influential misstatement, the auditor may also employ an expert to study climate phenomena and changes, as well as the risks and consequences associated with them, according to Egyptian Standard No. 620, "The Auditor's Use of an Expert."

### **1.7 study the efforts of professional organizations in assurance services towards climate change disclosure:**

#### **Efforts of the Big 4 about climate change:**

The Big 4 corporations have recently focused on the effects of climate change, and their activities can be summarized as follows:

**1) PwC's efforts towards the repercussions of climate change:** The cost of the water house Coopers PwC wrote a piece about climate change. The financial statements show the report stated that investors throughout the world are very interested in working on business responses to bear the costs of climate risk management because they are growing more concerned about the long-term economic effects of climate change. Some businesses have implemented operational changes to increase energy efficiency and lessen their adverse effects on the climate. Floods or forest leaves, for instance; changing the entire business model to one that uses less carbon (PwC, 2022).

**2) KPMG's efforts towards the repercussions of climate change:** In April 2022, Klynveld Peat Marwick Goerdeler (KPMG) released guidelines for climate-related disclosures for 35 banks, including those in the US, UK, Europe, Australia, Canada, and Asia. These guidelines were compared to the Task Force on Climate-related Financial Disclosures' guidelines in June 2022, and it was evident that these banks' disclosures on climate change had declined in 2021. To bring the banks' climate-related disclosures into line with the TCFD's suggested disclosures, a standard comparative examination of these disclosures was carried out in April 2022.

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**3) Deloitte's efforts towards the repercussions of climate change:** "Climate Disclosure - Integrating Climate-Related Information into the Annual Report" was a report prepared by Deloitte that explained how the 2015 Paris Climate Agreement indicated that there could be environmental changes and how these changes could impact the survival of businesses that have an impact on the climate. According to the Financial Stability Board, there are climate change-related risks that could have an impact on the financial system. Because these risks are long-term, businesses may not fully understand them or consider them. How can businesses and audit committees address climate challenges? was the question posed by the report. Accounting is merely an information system, thus in order to answer this question, we need supporting data in order to reveal climatic changes in financial reports from businesses. As a result, the study developed a technique for revealing climate changes that aligned with the governance, strategy, and risk management points mentioned in the ISSB's draft presentation. By combining numerous existing frameworks for climate-related disclosures, the working group has produced a helpful framework for financial disclosures pertaining to climate change. Since the framework incorporates disclosure of climate-related risks and opportunities related to commercial activity, it is ready to assist businesses in evaluating and disclosing. (Deloitte, 2022).

**4) E & Y's efforts towards the repercussions of climate change:** There are numerous difficulties, according to the EY (Young & Ernst) report on climate change and its hazards. According to the report, there are currently about 51 billion tons of greenhouse gas emissions worldwide. The analysis affirms that in order to prevent a potential global warming disaster, the major contributors to carbon emissions must achieve net zero emissions by 2050. Governments and businesses must spend billions to battle these emissions in order to achieve this. This can only be accomplished by precisely recording (disclosing) the actions that lead to these emissions in order to adequately reflect the harm done to the environment (EY, 2022).

### **1.8 The impact of professional assurance of disclosure of climate change on the value of the firm from extrapolating and analyzing previous studies and developing hypotheses:**

The market value of stocks, stock liquidity, and the accuracy of financial analysts' expectations are all positively impacted by external assurance on integrated business reports, according to several studies (Reverte, 2021). Additionally, the cost of capital is decreased. According to the study by Caglio et al. (2019), the assurance on

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integrated reports lessens the negative effects of poor textual features and the beneficial effect of emphasis increases when integrated reports are brief and easy to read. If businesses release integrated reports that are hard to read but verified by an impartial third party, this lessens the detrimental effect of reading difficulty on market value; if long integrated reports are prioritized, this lessens the detrimental effect on stock liquidity and analysts' expectations are less dispersed, suggesting that assurance serves as a mechanism to increase credibility for external users.

Because of the discretionary nature of carbon emissions disclosure, managerial incentives to manipulate such disclosure, and the absence of an internationally recognized protocol, stakeholders are likely to have doubts about the quality and dependability of corporate climate change-related disclosures (Datt et al., 2019). According to the literature currently in publication, obtaining external assurance (by an impartial third party) of nonfinancial data, such as data pertaining to climate change and other sustainability data, gives the disclosed data more legitimacy and dependability and increases stakeholders' trust in it. (Wong et al., 2016).

According to Herren Lee (2021), as part of broader climate-related measures, auditor assurance of present voluntary sustainability reporting might be the next step. The number of allusions to climate change in auditor reports increased significantly from 2% in 2020 to 70% in 2021, according to a survey of 88 businesses listed on the Amsterdam Stock Exchange. As part of broader climate-related measures, attestation of present voluntary sustainability reporting might be the next step. The number of allusions to climate change in auditor reports increased significantly from 2% in 2020 to 70% in 2021, according to a survey of 88 businesses listed on the Amsterdam Stock Exchange. The findings of this study shed light on how climate change affects financial statements and the associated auditor reports, which preparers, users, auditors, governments, and regulators can use to increase transparency regarding how climate change affects a firm's financial position and performance. (Tas et al., 2022).

The International Auditing and Assurance Standards Board (IAASB) (International Federation of Accountants (IFAC), 2012) released ISAE 3410 Assurance Engagements on Greenhouse Gas Emissions in response to the growing demand for assurance of corporate climate change disclosures. This is despite the existence of ISAE 3000 (Revised) Assurance Engagements Other Than Audits or Reviews of Historical Financial Information, which pertains to the assurance of

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general sustainability information (Zhou et al., 2016). As part of the assurance of a sustainability report or annual report, or on a stand-alone GHG report, ISAE 3410 highlights the necessity of implementing the assurance of carbon emissions disclosure (Datt et al., 2019).

Independent third-party assurance also improves the credibility of non-financial disclosures (including corporate climate change disclosures), which in turn improves the company's reputation, according to earlier research (Giannarakis et al., 2018). According to Giannarakis et al. (2018), independent evaluation of environmental initiatives stops businesses from controlling the information that is shared about climate change. Additionally, external assurance is crucial in assessing climate-related risks and concerns, which enhances environmental reporting transparency on the implementation of mitigation strategies. Few studies have examined the connection between external assurance and the volume of disclosures pertaining to climate change, despite the significance of and increasing demand for external certification of GHG emissions data.

Businesses are increasingly seeking assurance of two forms of nonfinancial disclosure: assurance of an organization's disclosure of information linked to climate change and assurance of the wide range of topics covered by sustainability disclosure (Zhou et al., 2016). Recent years have seen a rise in the number of studies examining this type of assurance due to the growing demand for external assurance of nonfinancial disclosure (Rossi and Tarquinio, 2017). A number of these research (e.g., Radhouane et al., 2020) have looked at how external assurance affects the company value and cost of equity capital of disclosing firms. the Carbon Disclosure Project (CDP) questionnaire make up the study's sample. According to the (Maji & Kalita ,2022) study, there is a positive and strong correlation between external audit fees and climate disclosure, which means that the market value of the stock rises as climate disclosure levels rise.

***H1: Professional assurance on management's climate change report positively impacts the disclosure of companies listed on the Egyptian Stock Exchange on its value.***

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Giannarakis et al. (2018) find that external assurance has a positive effect on climate change disclosure. They also look into how voluntary carbon disclosures are affected by the type of assurance provider (professional accounting firms or consulting firms) and financial auditor (Big4 or non-Big4 accounting firms).

The study by Dutta and Dutta (2020) investigates the relationship between the degree of corporate climate change disclosure and the categories of assurance providers (accountant versus non-accountant assurance provider, and if the assurance provider is an accounting company, whether it is a Big4 auditing firm).

The impact of voluntary corporate disclosure on firm value and the influence of the Big Four (audit quality) on this connection are investigated in the study by Kumar (2024). Findings: The findings presume that voluntary disclosures have a substantial beneficial effect on both the Tobin's coefficient and return on assets (ROA). Both the ROA and the Tobin's coefficient increase with voluntary disclosure. Additionally, for companies listed overseas and audited by Big Four firms, the effect of these disclosures on ROA and the Tobin's coefficient was more noticeable. Accordingly, the first sub-hypothesis of the second hypothesis of the research can be derived as follows:

***H2: The positive impact of professional assurance on the disclosure of information related to climate change by firms listed on the Egyptian Stock Exchange on its value varies according to the reputation of the type of assurance provider that performs professional assurance.***

According to some research (Landau et al., 2020), a variety of factors pertaining to the company, the sector, the nation, or the investor themselves influence the choice to purchase stocks. A number of factors, including the investor's experience and educational background, impact the investment decision. These factors then impact the investor's personal judgment and outcome. Investors' varying levels of expertise have an impact on how they perceive and comprehend the information contained in climate change reports, which can influence their choice to purchase stocks from the same company. Their divergent assessments of the company's shares are the cause of this. Investors with expertise respond to climate change announcements in different ways; the former respond more rapidly and efficiently.

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Through a survey of 9,000 individual investors in China, Lan et al. (2018) also found that investor demographics—such as experience and educational background—have a major impact on investors' investment behavior. According to a study by Reimsbach et al. (2018), investors' assessments are influenced by their background and certain psychological aspects. According to research by Musa (2018) and Ali (2019), the more experience an investor has, the stronger the correlation between non-financial information disclosure (such as climate change disclosure) and stock investment decisions, and ultimately, the firm's worth. Accordingly, the third hypothesis of the research can be derived as follows:

***H3: The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the experience of the investor.***

One of the things thought to influence investing decisions is education. An investment selection will be more advantageous and yield higher predicted returns the more educated one is. Since return on investment is a measure of better investment performance for investors, a highly educated investor has greater information and abilities that are helpful when making investment decisions (Obamuyi, 2013). In the same context, a study by (Musa, 2019) found a positive impact of the investor's level of educational qualifications on the relationship between disclosure of non-financial information (disclosure of climate change) and the decision to invest in stocks. Accordingly, the fourth hypothesis of the research can be derived as follows:

***H4: The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the qualification of the investor.***

## **1.9 Experimental study:**

### **1.9.1 Experimental study Objectives:**

The experimental study aimed to test whether there is an impact of the auditor's professional assurance on the disclosure of information related to climate change by companies listed on the Egyptian Exchange on their value. In addition to testing the impact of a set of moderating variables that include: the reputation of the audit office, the experience of investors and their scientific qualification on the main relationship under study.

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### **1.9.2 Study population and Participants:**

The study population consists of professional investors, including investment trustees from certain commercial banks and their assistants, investment managers in equity investment funds, and financial analysts working in brokerage and securities trading companies. A sample of 100 investors was drawn. By analogy with (Hoang & phang 2021), the number and percentage of valid responses that were statistically analyzed was 76%.

### **1.9.3 Experimental Task and Design:**

The researcher employed an experimental design to examine the impact of the auditor's professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Exchange, and its effect on the firm's value. The experimental design consisted of the following sections:

**Section One: Demographic Data:** This section includes participants' demographic information, such as their level of experience and professional qualifications as investors.

**Section Two: First Experimental Case:** This case presents actual financial statements for a publicly listed joint stock firm operating in the chemical industry for the years 2023 and 2024. The financial statements were reformatted into summarized financial reports, accompanied by the firm's disclosure of climate change-related information.

**Section Three: Second Experimental Case:** This case includes the same data as the first case, with the addition of a professional assurance report from the auditor regarding the firm's climate change-related disclosure.

**Section Four: Third Experimental Case:** This case builds upon the second case by including a statement confirming that the auditor's professional assurance report was issued by a partner audit firm affiliated with one of the BIG4 accounting firms.

Each experimental case was accompanied by a set of questions designed to collect participants' responses regarding the study variables. Participants were asked to indicate their willingness to invest in the firm's shares and to provide a forecast of the firm's share price at the end of the upcoming period.

### 1.9.5 Variables' measurement:

The following table shows the characterization and measurement of study variables as follows:

**Table (1) Variables' definition**

Variables	Measurement
<b>Independent variable</b>	
Professional assurance on the disclosure of information related to climate change	<p>This was achieved by presenting respondents with information concerning the firm's disclosure of climate change-related matters, accompanied by a professional assurance report attesting to the credibility of the disclosed information (Mamman et al ., 2021)</p> <p>This variable was measured by providing the auditor's professional assurance report on the firm's performance report (A) on climate change.</p>
<b>Dependent variable</b>	
Firm value	It is measured by the sample participants' estimation of the firm's share closing price at the end of the next period and their decision regarding investment in the firm's shares. (Rikkert , 2014)
<b>Moderating variables</b>	
Investor Experience	Investor experience is measured by the number of years of actual engagement in investment activities. The variable is coded as (0) if the experience is less than ten years and as (1) if the experience is ten years or more. (Muhammad 2020 )
Investor Qualification	An investor is considered highly qualified if they hold a postgraduate degree or possess professional certifications, in which case the variable is assigned a value of (1). Otherwise, if the investor has a lower level of academic qualification, the variable is coded as (0) .(Muhammad 2020)



### 1.9.6 Experimental design, treatments and comparisons:

To test the research hypotheses, the following experimental design (3×2×2) was used:

**Table ( 2) Experimental Design**

	Investor Experience		Investor Qualification	
	Experienced	Less Experienced	Qualified	Not Qualified
Firm disclosure of climate change-related information	Treatment (1) Investment decision and stock price prediction	Treatment (2) Investment decision and stock price prediction	Treatment (3) Investment decision and stock price prediction	Treatment (4) Investment decision and stock price prediction
Firm disclosure of climate change-related information with professional assurance	Treatment (5) Investment decision and stock price prediction	Treatment (6) Investment decision and stock price prediction	Treatment (7) Investment decision and stock price prediction	Treatment (8) Investment decision and stock price prediction
Firm disclosure of climate change-related information with professional assurance by a Big4 audit firm	Treatment (9) Investment decision and stock price prediction	Treatment (10) Investment decision and stock price prediction	Treatment (11) Investment decision and stock price prediction	Treatment (12) Investment decision and stock price prediction

**Based on this design, there are 12 experimental treatments as follows:**

- **Treatment (1):** Firm disclosure of climate change-related information / **experienced investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (2):** Firm disclosure of climate change-related information / **less experienced investor** / Investment decision in the firm's stock and stock price prediction.

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- **Treatment (3):** Firm disclosure of climate change-related information / **qualified investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (4):** Firm disclosure of climate change-related information / **not qualified investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (5):** Firm disclosure of climate change-related information with professional assurance / **experienced investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (6):** Firm disclosure of climate change-related information with professional assurance / **less experienced investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (7):** Firm disclosure of climate change-related information with professional assurance / **qualified investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (8):** Firm disclosure of climate change-related information with professional assurance / **not qualified investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (9):** Firm disclosure of climate change-related information with professional assurance provided by a Big4 audit firm / **Experienced investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (10):** Firm disclosure of climate change-related information with professional assurance provided by a Big4 audit firm / **less experienced investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (11):** Firm disclosure of climate change-related information with professional assurance provided by a Big4 audit firm / **Qualified investor** / Investment decision in the firm's stock and stock price prediction.
- **Treatment (12):** Firm disclosure of climate change-related information with professional assurance provided by a Big4 audit firm / **Not qualified investor** / Investment decision in the firm's stock and stock price prediction.

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To test the research hypotheses, the following four comparisons were made:

**1. The first comparison:** Between treatments (1 + 2 + 3 + 4) and treatments (5 + 6 + 7 + 8 + 9 + 10 + 11 + 12) in order to measure the positive impact of the professional assurance of the auditor on the firm's disclosure of information related to climate change on its value and then test the first hypotheses.

**2. The second comparison:**

Between  $\{(1+2+3+4) \times (5+6+7+8)\} \times \{(1+2+3+4) \times (9+10+11+12)\}$  in order to measure the impact of the different positive impact of the auditor's professional assurance on the firm's disclosure of information related to climate change on its value, according to the type of confirmation service provider, and then test the second hypothesis.

**3. The third comparison:** Between  $[(1) \times (5+9)] \times [(2) \times (6+10)]$  in order to measure the impact of the different positive impact of the auditor's professional assurance on the firm's disclosure of information related to climate change on its value, according to the level of experience of the investor, and then test the third hypothesis.

**4. Fourth comparison:** Between  $[(3) \times (7+11)] \times [(4) \times (8+12)]$  in order to measure the impact of the different positive impact of the auditor's professional assurance on the firm's disclosure of information related to climate change on its value, according to the level of scientific qualification of the investor, and then test the fourth hypothesis.

#### **1.9.6 Data analysis and Hypotheses testing:**

The researcher used a set of statistical tests program (SPSS 25) to conduct the necessary statistical analysis of the observations collected from the survey list to reach statistical results that support the acceptance or rejection of research hypotheses. These tests included:

##### **1.9.6.1 Reliability Testing:**

To ensure the reliability and internal consistency of the items and questions that constitute each variable in the study, as addressed in the distributed questionnaire, Cronbach's Alpha test was conducted. This statistical test is widely recognized as appropriate for assessing the reliability of measurement instruments. It indicates the degree of consistency in respondents' answers to the experimental scenarios. The

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minimum acceptable value for Cronbach's Alpha is 0.60, while the optimal range lies between 0.70 and 0.80. Higher values of this coefficient indicate greater reliability of the data, thereby enhancing the generalizability of the sample results to the study population. Referring to the results in Table (3), the Cronbach's Alpha coefficient for the experimental case questions was found to be **0.897**, which indicates a high level of data reliability.

**Table (3) Cronbach's Alpha Coefficient for the Study Sample**

Reliability Statistics	
Cronbach's Alpha	N of Items
.897	12

#### **1.9.6.2 Wilcoxon Signed-Rank Test:**

**The Wilcoxon Signed-Rank Test was employed** to examine the effect of auditor professional assurance on the firm's disclosure of climate change-related information and its perceived value. This test is one of the non-parametric methods used to determine whether there are statistically significant differences between the medians of two related samples. Accordingly, the statistical hypotheses for this test can be formulated as follows:

- **Null Hypothesis ( $H_0$ ):**  $M_A = M_B$   
There are no statistically significant differences between the medians of the same sample regarding the variation in professional assurance on climate change-related disclosures and its impact on their decisions.
- **Alternative Hypothesis ( $H_1$ ):**  $M_A \neq M_B$   
There are statistically significant differences between the medians of the same sample concerning the variation in the practice of internal audit roles and its influence on their decisions.

According to this test, if the **p-value** is less than 5% at a 95% confidence level, the null hypothesis is rejected and the alternative hypothesis is accepted. Conversely, if the **p-value** is greater than 5%, the null hypothesis is accepted, and the alternative is rejected.

### 1.9.7 Descriptive Statistics:

The researcher relied on 76 responses .As shown in Table (4), the distribution of the research sample of investors by educational qualification indicates that bachelor's degree holders represent 31.6% of the total sample. They are followed by holders of diplomas and professional certificates, who also represent 31.6%. Master's degree holders account for 26.3%, while PhD holders represent the smallest group at 10.5% of the total research sample.

**Table (4) Descriptive Statistics (Investor Qualification)**

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree	24	31.6	31.6	31.6
Diplomas and Professional Certificates	24	31.6	31.6	63.2
Master's Degree	20	26.3	26.3	89.5
Ph.D	8	10.5	10.5	100.0
<b>Total</b>	<b>76</b>	<b>100.0</b>	<b>100.0</b>	

As shown in Table (5), the distribution of the research sample of investors based on years of experience indicates that investors with 10 years or more of experience represent 72.3% of the total sample. Those with 5 to less than 10 years of experience account for 17.1%, while investors with less than 5 years of experience represent 10.5% of the total research sample.

**Table 5: Descriptive Statistics (Investor Experience)**

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 years	8	10.5	10.5	10.5
From 5 to less than 10 years	13	17.1	17.1	27.6
From 10 to less than 15 years	27	35.5	35.5	63.2
15 years or more	28	36.8	36.8	100.0
<b>Total</b>	<b>76</b>	<b>100.0</b>	<b>100.0</b>	

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### 1.9.8 Hypotheses Testing:

**1.9.8.1 Testing H1:** To test the first research hypothesis (H1), which states that “Professional assurance on the disclosure of information related to climate change by firms listed on the Egyptian Stock Exchange has a positive impact on its value”.

The researcher employed the **Wilcoxon Signed-Rank Test** for two related samples in this context. Table (6) below presents the results of this test.

**Table (6) Wilcoxon Signed-Rank Test Results for H1**

		N	Mean Rank	Sum of Ranks
Investors' Perception of the Impact of Professional Assurance on the Disclosure of Climate Change Information on Firm Value (BC) - Investors' Perception of the Impact of Corporate Disclosure of Climate Change Information on Firm Value (A)	Negative Ranks	4 <sup>a</sup>	14.13	56.50
	<b>Positive Ranks</b>	<b>62<sup>b</sup></b>	34.45	2154.50
	Ties	10 <sup>c</sup>		
	Total	76		
a. BC < A				
b. BC > A				
c. BC = A				

Test Statistics	
	BC - A
Z	-6.790 <sup>b</sup>
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Referring to the results of the statistical analysis in Table (6), it is observed that 62 out of 76 respondents (i.e., 81.5% of the total sample) demonstrated a higher level of perception regarding the professional assurance provided by the auditor under the second experimental condition compared to the first. Conversely, 4 respondents (5%) exhibited a lower level of perception under the second condition compared to the

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first. The remaining 10 respondents (13%) showed no difference in perception between the two experimental conditions. These results indicate a predominant trend among respondents toward **a higher perception** of the role of professional auditor assurance on the disclosure of climate change information.

Furthermore, the results of the Wilcoxon Signed-Rank Test show that the p-value was 0.000, which is below the 5% significance level, leading to the rejection of the null hypothesis that the two-group means are equal. Consequently, the alternative hypothesis is accepted, indicating a statistically significant difference in favor of the condition with the higher mean—namely, investors' perception in the second experimental condition. This finding supports the acceptance of **the first research hypothesis (H1)**, which states that investors perceive a greater impact of auditor professional assurance on firm value in the second condition compared to the first. The mean perception score in the second condition was 4.52, compared to 4.07 in the first condition.

The present finding is consistent with previous studies (Gianarakis et al., 2018; Radhouane et al., 2020). Whereas independent third-party assurance enhances the credibility of non-financial disclosures (such as climate change disclosures) and thus establishes firm reputation and improves firm value. Also, Independent assurance of environmental initiatives prevents companies from manipulating the dissemination of climate change information. Furthermore, external assurance plays an important role in assessing risks and concerns related to climate change, thereby improving the transparency of environmental reporting related to the level of climate change-related disclosures and enhance firm value.

#### **1.9.8.2 Testing H2:**

To test the research Second hypothesis (H2), which states that “The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the qualification and experience of the investor”.

The researcher employed the **Wilcoxon Signed-Rank Test** for two related samples in this context. Table (7) below presents the results of this test.

**Table (7)** Wilcoxon Signed-Rank Test Results for H2

Second hypothesis (H2)		Wilcoxon Signed Ranks Test	
		Z	P-value
The positive impact of professional assurance on the disclosure of information related to climate change by firms listed on the Egyptian Stock Exchange on its value varies according to the reputation of the type of assurance provider that performs professional assurance	Professional assurance on the disclosure of information related to climate change by firms has a positive impact on its value.	6.104	0.000
	Professional assurance from Big4 audit firms on the disclosure of information related to climate change by firms has a positive impact on its value	6.651	0.000

The results of the test (Table 7) indicate that investors **respond significantly** to the **professional assurance provided by auditors** on corporate disclosure of climate change information when evaluating stock prices and making investment decisions in both cases (**Big4 and Non-Big4**). The **p-value (.000)** was found to be **less than 5%**, indicating that the auditor's professional assurance on climate-related disclosures **has a statistically significant impact** on the firm's market value and investors' stock investment decisions.

The researcher conducted a **comparison between the two cases** using the **calculated Z-values** to determine the **magnitude of the impact** of the type of assurance provider on the relationship under investigation. The comparison was based on the principle that **the higher the calculated Z-value**, the stronger the influence of the assurance provider type on the relationship.

Referring to the results, it is observed that the **calculated Z-value in the case of assurance provided by a Big4-affiliated audit firm (6.651)** is greater than the Z-value in the first case (non-Big4) (6.104). This implies that the **type of assurance**



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**provider** has a **statistically significant effect** on the relationship under study. Accordingly, the **null hypothesis is rejected**, and the **alternative hypothesis is accepted**. This finding supports the acceptance of the **second hypothesis (H2)**.

This result suggests that the credibility and reputation of the assurance provider significantly influence investor perception. The higher Z-value associated with Big4-affiliated audit firms indicates that investors place greater trust in disclosures that are assured by globally recognized and reputable firms. This heightened trust likely stems from the perceived higher quality, independence, and rigor associated with Big4 auditors. Therefore, the type of assurance provider enhances the perceived reliability of climate-related disclosures, which in turn has a stronger impact on investment decisions.

The present finding is consistent with previous studies suggesting that The Big 4 helps combat the risk of information asymmetry. The level of climate change disclosure is influenced by the financial statements audited by Big four companies, which boosts investor confidence and the firm value. Therefore, the relationship between climate change disclosure and firm value may change depending on the type of assurance provider. This is consistent with the study (Kumar , 2024)

**1.9.8.3 Testing H3:** To test the third research hypothesis (H3), which states that *“The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the experience of the investor.”*

The researcher employed the **Wilcoxon Signed-Rank Test** for two related samples in this context. Table (8) below presents the results of this test.

**Table (8)** Wilcoxon Signed-Rank Test Results for H3

Third hypothesis (H3)		N	Wilcoxon Signed Ranks Test	
			Z	P-value
The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the experience of the investor.”.	Professional assurance on the disclosure of information related to climate change by firms has a positive impact on its value, according to less experienced investors.	21	2.579	0.010
	Professional assurance on the disclosure of information related to climate change by firms has a positive impact on its value, according to experienced investors.	55	6.245	0.000

The test results (Table 8) indicate that both **experienced and less experienced investors** respond **significantly** to the **professional assurance provided by auditors** on corporate disclosure of climate change information when evaluating stock prices and making investment decisions, as the **p-value was less than 5%**. This suggests that **investor experience level** has a **statistically significant impact** on the relationship between the auditor’s professional assurance on climate-related disclosures and investment decision-making.

The researcher conducted a comparison between the two groups using the **calculated Z-values** to assess the **magnitude of the impact of investor experience** on the relationship under investigation. By comparing the Z-values for the first and second cases, it was found that **a higher Z-value indicates a stronger influence of investor experience level** on the relationship.

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The results reveal that the **Z-value for experienced investors (6.245)** is **higher** than that for **less experienced investors (2.579)**. This implies that **investor experience** had a **statistically significant effect** on the relationship under study. Therefore, the **null hypothesis is rejected**, and the **alternative hypothesis is accepted**. This finding supports the acceptance of the **third research hypothesis (H3)**.

The findings underscore the importance of investor experience in interpreting and responding to assurance-related disclosures. Experienced investors are likely to possess greater analytical capabilities, familiarity with financial reporting standards, and a deeper understanding of assurance services, which collectively enhance their ability to assess the credibility and implications of climate-related disclosures. This heightened awareness likely contributes to their stronger reaction to auditor-provided assurance, as reflected in the higher Z-value observed. Conversely, less experienced investors may lack the necessary expertise or confidence to fully interpret the significance of such disclosures, resulting in a more subdued response. These results suggest that experience acts as a moderating variable, amplifying the perceived value and impact of professional assurance on investment decisions.

This result is consistent with my study (Reimsbach et al., 2018) which found a significant effect of experience level on investment decisions or the relationship between professional assurance on non-financial disclosure and the decision to invest in stocks. This result reflects the increased awareness of the importance of the impact of auditor assurance on corporate climate change disclosure on the future of firms among experienced investors.

**1.9.8.4 Testing H4:** To test the **fourth hypothesis (H4)** , which states that *“The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the qualification of the investor”*.

The researcher employed the **Wilcoxon Signed-Rank Test** for two related samples in this context. Table (9) below presents the results of this test.

**Table (9)** Wilcoxon Signed-Rank Test Results for **H4**

Fourth hypothesis (H4)		N	Wilcoxon Signed Ranks Test	
			Z	P-value
The positive impact of professional assurance on the disclosure of climate change-related information by firms listed on the Egyptian Stock Exchange on its value varies depending on the experience of the investor.”	Professional assurance on the disclosure of information related to climate change by firms has a positive impact on its value, according to Not Qualified investors.	48	4.576	0.000
	Professional assurance on the disclosure of information related to climate change by firms has a positive impact on its value, according to Qualified investors.	28	4.888	0.000

The test results (Table 9) indicate that both **qualified and less not qualified investors** respond **significantly** to the **professional assurance provided by auditors** on corporate disclosure of climate change information when evaluating stock prices and making investment decisions, as the **p-value was less than 5%**. This suggests that **investor experience level** has a **statistically significant impact** on the relationship between the auditor’s professional assurance on climate-related disclosures and investment decision-making.

The researcher conducted a comparison between the two groups using the **calculated Z-values** to assess the **magnitude of the impact of investor experience** on the relationship under investigation. By comparing the Z-values for the first and second cases, it was found that **a higher Z-value indicates a stronger influence of investor experience level** on the relationship.

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The results reveal that the **Z-value for qualified investors (4.888) is higher** than that for **not qualified investors (4.576)**. This implies that **investor experience** had a **statistically significant effect** on the relationship under study. Therefore, the **null hypothesis is rejected**, and the **alternative hypothesis is accepted**. This finding supports the acceptance of the **fourth research hypothesis (H4)**.

This result indicates that academically qualified investors are more responsive to assurance on climate-related disclosures when making investment decisions. Their higher level of education or possession of professional certifications likely enhances their ability to interpret and evaluate the implications of such disclosures. Consequently, their investment judgments are more strongly influenced by the presence of professional assurance, underscoring the critical role of investor sophistication in financial decision-making

This result is consistent with previous studies of (Reimsbach et al., 2018) which concluded that there is a significant impact of the level of educational qualification on the investment decision or on the relationship between the disclosure of non-financial information and the decision to invest in stocks. The researcher concludes from the above to accept the fourth hypothesis (H4) and justifies this by saying that the presence of an assurance report attached to the companies' disclosure of climate change is more beneficial to the investor with a high level of educational qualification who is aware of and familiar with the latest amendments in the audit standards or in the form of the auditor's report and with non-traditional professional assurance services by improving his understanding and awareness of the information contained in the companies' disclosure of climate change, which enables him to benefit from the information content of this disclosure more than the unqualified investor when making an investment decision and thus improve the quality of his judgments.

The researcher concludes from the above to accept the fourth hypothesis (H4), as there is a significant effect of the difference in the level of scientific qualification of the investor on the positive relationship between the auditor's assurance of firms' disclosure of climate change and the decision to invest in stocks. This result can be interpreted as the scientific qualification of investors contributes to improving their awareness of the assurance report attached to the climate change disclosure report, as the scientific and professional qualifications and certificates obtained by the investor have a significant effect on improving the quality of the investment decision by improving his understanding, readings and awareness of the information contained in the climate change disclosure report and the assurance report attached to it.

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### **1.10 Results of the study:**

Study states that investors perceive a greater impact of auditor professional assurance on firm value. Whereas independent third-party assurance enhances the credibility of non-financial disclosures (such as climate change disclosures) and thus establishes firm reputation and improves firm value. Also, the type of assurance provider enhances the perceived reliability of climate-related disclosures, which in turn has a stronger impact on investment decisions. Also, the Big 4 helps combat the risk of information asymmetry. The level of climate change disclosure is influenced by the financial statements audited by Big four companies, which boosts investor confidence and the firm value. Qualified and experience investors are more responsive to assurance on climate-related disclosures when making investment decisions and enhances their ability to interpret and evaluate the implications of such disclosures.

### **1.11 Recommendations:**

The researcher recommends the need to activate the role of auditors in ensuring the disclosure of climate change information, which will assist stakeholders in making decisions related to these companies. This can be achieved by qualifying and training auditors in providing professional assurance on climate change-related disclosures, and by developing their skills and professional competence to perform this service. The researcher also recommends the issuance of an Egyptian standard for the assurance of climate change information, in light of the recommendations and guidelines of local and international professional and academic organizations.

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### ملخص البحث:

**هدف البحث:** تهدف الدراسة الى أثر التوكيد المهني لمراقب الحسابات على افصاح الشركات عن التغيرات المناخية على قيمة المنشأة؛ . وكذلك أثر بعض المتغيرات المعدلة مثل (نوع القائم بخدمة التوكيد ومستوى الخبرة والتأهيل العلمي للمستثمر) على العلاقة بين التوكيد المهني لمراقب الحسابات على افصاح الشركات عن التغيرات المناخية وقيمة المنشأة.

**منهجية البحث:** لتحقيق هدف البحث، قام الباحث بتحليل الدراسات السابقة التي قدمتها الأدبيات المحاسبية في مجال الإفصاح عن تغير المناخ، وذلك للاستفادة من الإسهامات العلمية. ثم استخدم الباحث المنهج الاستنباطي لبلورة أثر التوكيد المهني لمراقب الحسابات على الإفصاح عن تغير المناخ على قيمة الشركة وكذلك أثر نوع القائم بخدمة التوكيد ومستوى الخبرة والتأهيل العلمي للمستثمر على العلاقة بين التوكيد المهني لمراقب الحسابات على افصاح الشركات عن التغيرات المناخية وقيمة المنشأة. ثم صياغة فرضيات البحث من خلال دراسة تجريبية. أما الدراسة التجريبية، فسيتم اختبار فرضيات البحث بتطبيقها على عينة من مستثمري الأسهم في شركات الوساطة وشركات تداول الأوراق المالية، وسيتم التوصل إلى نتائج تحقق هدف البحث.

**نتائج البحث:** خلصت نتائج هذه الدراسة التجريبية إلى وجود تأثير إيجابي للتوكيد المهني على إفصاح الشركات المدرجة في البورصة المصرية عن المعلومات المتعلقة بتغير المناخ، وتأثير ذلك على قيمتها. ويتأثر مستوى الإفصاح عن تغير المناخ بالقوائم المالية المدققة من قبل الشركات الأربع الكبرى، مما يعزز ثقة المستثمرين وقيمة الشركة. وبالتالي، قد تتغير العلاقة بين الإفصاح عن تغير المناخ وقيمة الشركة تبعاً لنوع مقدم خدمات التوكيد. وأخيراً توصلت الدراسة إلى أن هناك تأثيراً معنوياً لمستوى الخبرة والمؤهل العلمي على قرار الاستثمار أو على العلاقة بين الإفصاح عن المعلومات المتعلقة بالتغير المناخي وقرار الاستثمار في الأسهم (قيمة المنشأة).

**الإضافة العلمية:** تسهم هذه الدراسة في الادب المحاسبي من خلال تحليل العلاقة بين التوكيد المهني لمراقب الحسابات على افصاح الشركات عن التغيرات المناخية وقيمة المنشأة ، وقياس أثر (نوع القائم بخدمة التوكيد ومستوى الخبرة والتأهيل العلمي للمستثمر) على طبيعة هذه العلاقة في بيئة الاعمال المصرية.

**الكلمات المفتاحية:** التوكيد المهني، الإفصاح عن التغيرات المناخية، قيمة الشركة ، اسعار الاسهم، نوع مقدم خدمة التوكيد، خبرة ومستوى تأهيل المستثمر