The Influence of Cognitive Bias on Professional Judgment in Auditing: An Empirical Study from Egypt

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Abstract:

Audits of financial statements necessitate the utilization of professional judgment, as the procedures and the strategies outlined in auditing standards lack straightforward and clear-cut instructions for auditors to follow when conducting an audit. Although auditors are expected to adopt thorough thinking methodologies when making decisions, there is a high probability that they may not make the right decision due to the cognitive biases and judgmental traps.

This study aims to examine how significant psychological biases affect auditors' professional judgment when conducting an audit. Based on recent literature in the fields of accounting, auditing, and psychology, the researcher outlines four distinct biases that impact the quality of professional judgment for external auditors.

To test the study hypothesis, the researcher collected data from 118 certified auditors for survey analysis.

The study's main finding is that cognitive biases such as self- serving bias, cognitive dissonance, jump to a conclusion and

sunk-cost fallacy can negatively affect auditor's professional judgment.

The study indicates that understanding the impact of cognitive biases on auditor independence and professional judgment is critical for enhancing auditor professional judgment and improving audit quality accordingly. The study recommends that auditors should have adequate training to identify and manage their cognitive biases. Also, professional organizations and standards setter should develop procedures to minimize the impact of cognitive biases on auditors' professional judgment.

Keywords: Auditor professional judgment, Cognitive biases, self- serving bias, cognitive dissonance, jump to a conclusion, sunk-cost fallacy, Audit quality.

Introduction

Behavioral psychology is one of the most popular topics in many fields of different science. (Henrizi et al., 2021). The last few decades have experienced the integration of different behavioral models and theories in different disciplines that includes psychology, marketing, and health science. (Geller, 2021; Chou, 2020; Prusaczyk, A. et.al., 2023). Research methods and techniques from different studies in these areas have been adapted by other disciplines of study such as accounting and auditing which give rise to behavioral accounting and auditing research. (Knechel, 2000)

Professional judgment has been recognized as a core basis up on which the accounting and auditing practices are formed (Schmutte and Duncan, 2009).

It is considered an important part of every audit and the basis for making decisions across its various stages (Mautz and Sharaf (1961). Thus, the audit process involves significant professional judgment throughout all its phases. When performing an audit, auditors can practice professional judgment in different areas such as identifying audit objectives, setting materiality, assessing risks, evaluating evidence, and drawing a conclusion regarding the fairness of the financial statement. (Arens et al, 2021). In making such judgments or decisions, auditors need to employ a process-based decision approach, which is tailored to help them to consider all relevant factors that might impact audit findings.

Recent studies on heuristics and biases in audit judgments have demonstrated how they impact an auditor's capability to apply their professional judgment effectively during the auditing process (Lambert and Peytcheva, 2020; Nguyen, 2023). In that manner, psychological traps may influence auditors' performance of specific audit procedures.

Consequently, the main aim of this study is to shed light on how cognitive bias influences the professional judgment of auditors, which can lead to enhancing decision making at different audit stages and improving audit quality accordingly.

Research on Professional judgment in auditing focuses on two major topics. First, studies that show auditor's judgment quality which is measured by how auditors will perform when carrying out tasks that require exercising professional judgment. (e.g., Grenier, et al., 2020; Wedemeyer, 2010) Second, judgment research looks at the variables that influence both high/low quality judgments, specifically focusing on aspects that influence professional judgment. (e.g Salehi and Dastanpoor, 2021; MacLean and Dror, 2023; Holt and Loraas, 2021)

The focus of this study is on the determinants of professional judgment, specifically the impact of cognitive biases on the professional judgment of external auditors. The goal of this study is to heighten awareness among auditors about certain cognitive biases that could impact their decision-making, while also offering various recommendations for mitigating these biases. Examining the connection between cognitive biases and professional judgment in auditors is crucial for a variety of reasons, First, examining the relationship is very important for the profession, as it helps practitioners to avoid cognitive biases and psychological traps that may adversely affect their performance and their ability to conduct unbiased audits. As a result, this could enhance the overall quality of financial statement audits and boost stakeholder trust in the profession, especially considering the intricate and fast-evolving changes of financial statement auditing (Peecher et al. 2013). Furthermore,

studying the relationship is crucial for researchers and academics in both psychology and accounting fields. From the psychological perspective, it is very important to acquire the necessary understanding of different factors that affect human behavior, and how the psychological traps will be affecting the decision-making framework. In the context of auditing, research in this field can help identifying areas where auditors are susceptible to cognitive bias and psychological traps, which can lead to the development of different suggestions to eliminate or at least reduce these risks to enhance the effectiveness and efficiency of the audit process.

In addition, this study expands up on prior studies by providing a more comprehensive understanding of the impact of cognitive biases on auditors' professional judgments and to audit quality (e.g., Holt and Loraas, 2021; Nolder and Kadous, 2018). The researcher addresses this by concentrating on a range of psychological biases that are essential for maintaining a high standard of professional judgment. Moreover, investigating the link between cognitive biases and the professional judgment of auditors holds significant value for those setting standards. Recognizing that cognitive biases can be key factors that threaten audit quality and lead to audit shortcoming suggests a necessity to modify auditing guidelines to emphasize the importance of understanding how cognitive biases impact professional judgment.

The structure of the remainder of the study unfolds as follows: Section two delves into literature related to professional judgment and cognitive biases, as well as the development of hypotheses. In section three, these research hypotheses undergo detailed testing. Section four offers concluding remarks. The final section discusses the limitations of the study and provides suggestions for future research.

Literature review and hypothesis development

Professional judgment in auditing.

Bonner (1999) describes judgment as the cognitive capability to develop an assessment or estimation concerning an object, occurrence, condition, or other kinds of phenomena. Clients hire external auditors to provide an independent evaluation of adherence to Generally Accepted Accounting Principles, and to assess the effectiveness of internal controls over financial reporting (Brody et al., 2022). Exercising effective professional judgment is an essential feature of any audit and a fundamental requirement of auditing standards setters.

The International Standard on Auditing ISA 200 (2009) describes professional judgment as "the utilization of applicable training and expertise in the framework of auditing and ethical norms to make well-informed choices regarding suitable actions while conducting an audit". This emphasis the importance of aligning auditor's judgment with the highest professional and ethical guidelines to ensure the audit's effectiveness and efficiency.

To provide auditors with instructions on how to form an accurate judgment, the Institute of Public Accountant in Scotland released a professional judgment guideline (ICAS, 2016). The guideline requests auditors to adhere to four main principles to ensure the quality of their professional judgment, information gathering, evaluation of accounting and auditing principles, evaluating their client judgments, and documenting the judgment process. Moreover, the Financial Reporting Councils in United Kingdom has declared that ineffective exercise of professional judgment can substantially impair audit quality (FRC, 2022)

Earlier studies in auditing provided practical proof in regrade to the factors affecting auditor's professional judgment. These studies are based on the framework suggested by Bonner and Sprinkle (2002). It is indicated by the framework that three major factors affect auditor professional judgment: personal factors, task-related factors, and environmental factors. Consequently, research on judgments can be categorized according to these three criteria.

Studies addressing how personal traits and characteristics impact auditors' professional judgment might involve those investigating the impact of interpersonal skills, determination, client-auditor relationship and interaction, objectivity, critical thinking, learning and adaptability, open mindedness on auditor's professional judgment (Nguyen, 2023; Soe et al., 2022; Kadous and Zhou, 2019; Mala and Chand, 2015).

In a 2022 study conducted by Soe et.al, it was highlighted that personal factors like age, education, professional qualifications, and expertise play a significant role in influencing an auditor's judgment.

According to Kadous and Zhou (2019), those auditors with a clear sense of determination tend to reach more appropriate decisions compared to auditors who has low or no self-motivation.

In their comprehensive study, Mala and Chand (2015) describes auditor professional judgment as an individual factor that is shaped by the interplay of five specific elements: skill set, expertise, capability to process information, strategic employment of decision-support tools, and the underlying influence of previously held beliefs, often known as anchoring.

Şişmanoğlu and Arıkboğa (2018) highlight different factors that impact auditor's professional judgment. These factors include auditor's objectivity and integrity, knowledge and learning abilities, experience, skill level, and critical thinking.

Studies investigating the impact of task- related criteria on judgments may involve the studies looking at the role of task characteristics and its impact on judgment (Mohd Sanusi et al., 2018; Wright and Wu, 2018). Mohd Sanusi et al. (2018) suggest that the complexity of audit tasks can influence how auditors make decisions, with varying decisions observed between less intricate and more advanced audit activities.

Similarly, studies that focus on environmental criteria have investigated the effects of accounting and auditing standards, workplace distractions, managerial influence, peer dynamics, auditors' relationships with their audit clients, legal responsibilities, codes of conduct, and personal ethics on auditor judgment. (Kenchel, 2000; Gao, and Zhang, 2019). Kenchel, 2000 points out that auditors' exercise of professional judgment during conducting an audit could be subject to different constraints or factors. He noted that auditor's judgment path might intersect with the delineated professional standards constraints, the complex web of legal responsibilities, the guiding principles of code of morals and professional rules and ethics.

In a study conducted by Gao and Zhang in 2019, they found that auditing standards affect auditors' professional judgment and, consequently, audit quality. Although auditing standards are beneficial in addressing potential conflicts of interest between auditors and stakeholders, they can limit auditors' ability to exercise their professional judgment. This limitation, in turn, may reduce auditors' incentives to enhance their competence.

Apparently, professional judgment represents an important part of any audit. As emphasized by Knechel (2016), the quality of an auditor's judgment profoundly influences the overall integrity of the audit. Ensuring the quality of auditor judgment is very crucial, as the excellence of these judgments invariably

influence not only auditor's professional standing and reputation, but also resonates with various stakeholders involved. (Mala and Chand, 2014). However, pitfalls in judgment can emerge at any point in the auditor's evaluation process. Auditors may misinterpret the specifics of the situation they're evaluating, neglect pertinent decision-making elements, misjudge the importance of these elements, improperly evaluate the available choices, or, in the end, come to an incorrect conclusion.

For this study, the researcher will employ a combination of the following metrics to evaluate the quality of auditor's professional judgment.

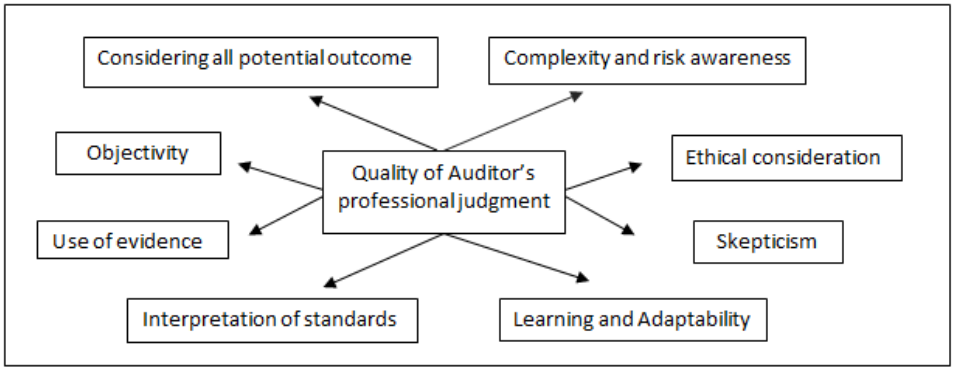

Figure (1) Determinant of High-Quality Professional Judgment

Source: Developed by the researcher

In auditing literature, numerous studies were designed to investigate the importance of professional judgment and different factors affecting it, nevertheless limited studies were designed to

investigate psychological biases and their impact on auditor's professional judgment.

Focusing on cognitive biases and heuristics and their impact on auditors' judgment is what the existing literature lakes. Research on judgment and decision-making suggests that auditors may not always arrive at sound decisions. According to Ceschi et al. (2019), this inconsistency might arise from auditors using methods that aim to make the decision-making process faster and simpler. Nonetheless, there is a minimal body of research that investigates the adoption of simplifying strategies in audit decision- making and when exercising professional judgment, as well as their implications. This calls for research to investigate these mental shortcuts that auditors employ to simplify their professional judgment mechanism, along with the potential biases that may emerge from such approaches. The following section of this paper will discuss in detail how the cognitive biases will affect auditors and their ability to develop accurate decisions and exercise precise professional judgment.

Cognitive biases

Humphreys (1979) describes an individual cognitive ability is described by as "the outcome of the process of gaining, holding in memory, recovering, integrating, evaluating, and utilizing knowledge and information in new situations."

When talking about rational decisions, making decisions is considered a very challenging process, as the decision makers

need to handle plenty of information and to consider different circumstances. (Kahneman et. al., 2011). This, consequently, requires mental efforts and dealing with uncertain situations and complex information. (Cossette, 2014). In such situations it might be very hard for the decision maker to make logical/rational decisions (Cossette, 2014), instead they unintentionally tend to adopt cognitive biases or heuristics to simplify the decision-making process. (Cossette, 2014)

Studies conducted on heuristics and cognitive biases state that utilization of such mental shortcuts is a double-edged sword. On one hand, Heuristics have several advantages for people when making decisions, they facilitate speedy decisions (Tversky and Kahneman,1974). In another study, McLaughlin et al. (2014) emphasizes the cognitive benefits of heuristics when making decisions, as it helps to minimize time and efforts spent by decision makers on the other hand, the literature highlights those cognitive biases, which are judgmental errors, can arise from applying heuristics. (Cossette, 2014; Tversky and Kahneman, 1974**).** Researchers viewed heuristics as a doubtful advantage. Even though they have expected benefits, they may lead to judgment errors (Cossette, 2014).

This has inspired a lot of research in different disciplines to investigate the different types of mental shortcuts people use to form judgments and decisions and the biases these shortcuts can trigger. (Whelehan et al., 2020, Shu, 2018).

For instance, a study conducted by Saposnik et al. (2016) examines how mental shortcuts and heuristics can result in cognitive errors in how medical practitioners develop their medical judgment.

Other research papers have examined cognitive shortcuts and biases in different situations involving making judgments and decisions, like economics (Lacombe et al. 2022), finance (Haman and Laker, 2018), and banking (Jarrar, 2021), among other areas.

Although different studies have investigated mental shortcuts and biases in making decisions, few have explored their implications within the auditing context.

Consequently, the researcher will present a group of scholarly studies that investigate the relationship between cognitive biases and auditing practices.

Cassell et al., 2022:

The study aims to investigate whether confirmation bias exists among auditors and to assess if this bias persists despite quality control mechanisms established by standard regulation agencies and auditing firms to lessen it. The study finds that auditors who have formerly audited clients with a low-risk background that later escalated do not sufficiently adapt to the elevated risk scenario. However, this shortfall is lessened when the increase in risk is significant enough to breach the auditor's standard

of what is reasonable, or when the client attracts considerable public attention or is under stringent external oversight.

Brody et al., 2022:

The study assesses the potential impact of cognitive bias on the professional judgment of fraud examiner and how it affects their decision-making process. The study offers a summary of the main biases and examples from real world situations showing how they might impact fraud examiner decisions. Also, it provides helpful suggestions for preventing and lessening their expected impact.

Henrizi et al., 2021:

This study aims to highlight how certain judgmental shortcuts can negatively impact audit decision-making, resulting in consistent judgment errors.

To test the study hypotheses, the researchers created a survey featuring five different situations, along with a follow-up questionnaire. In the study, 103 auditors underwent random assignment into either a control or an experimental group.

The research finds that Swiss auditors utilize the anchoring where they rely too heavily on an initial piece of information in a manner that might adversely affect their judgments. Moreover, the study indicates that the size of the audit firm influences decisions associated with this cognitive shortcut. Particularly,

auditors affiliated with big audit firms are less influenced by anchoring biases in their audit decisions.

Chang and Luo, 2021:

The aim of this study is to investigate if data visualization activates cognitive biases, and to understand such biases affect audit quality. This study conducts an evaluation to determine the effect of five primary cognitive biases (framing, availability, overconfidence, anchoring, and confirmation) on auditor's tasks related to data visualization, and if these biases compromise audit quality. The finding suggests that data visualization could trigger cognitive biases in the auditing process. When not adequately managed, these biases could harm the quality of auditors' judgments and decisions.

Maradona, 2020:

This study aims to investigate if auditors have cognitive biases in their assessments and to identify the heuristics responsible for these biases.

This study utilizes a qualitative methodology and adopts an ethnomethodological framework for its inquiry. Information was gathered through comprehensive semi-structured interviews involving 15 auditors, who held various positions ranging from partners and managers to senior and junior roles within a public accounting firm.

This study demonstrates that auditors use heuristics in their professional evaluations. The study identifies five specific biases: jumping to a conclusion, groupthink, representativeness, availability, and anchoring. These biases result in consistent mistakes, known as biases, in auditors' judgments during financial statement audits.

Frank, 2020:

The study explores if an auditor's psychological distance from a scenario and the level of uncertainty presents in a context affect the chances of the auditor's values having a more dominant impact on their decisions than personal interests.

To explore how psychological distance and uncertainty affect the strength of auditors' professional values versus their self-interest, The researcher used an experimental design that compares the response from 96 audit seniors.

The study indicates that, in uncertain situations, auditors are more guided by their values when they view a situation from an emotional distance (not being closely involved). However, when they are more personally connected to the situation, their own interests play a bigger role in their decisions.

Anderson, 2014

The study investigates the assumption that hindsight bias contributes to overconfidence and examines its impact on auditors' judgments or choices.

The study looked at 114 auditors from big accounting firms. Half had around 9 years of experience, and the other half had about 1 year. They were randomly put into one of three different test conditions. The study looked at how they viewed negative and positive factors and how they predicted a company's success for the next year. Two things were measured: the guess on whether the company would succeed and how important they thought certain negative and positive factors were.

The research finds that auditors focus more on negative signs than positive ones, regardless of their experience level. But if they know a company failed, they're more likely to say the bad signs were important than if they didn't know what happened to the company.

As illustrated above, Current research on how cognitive biases influence auditor's professional judgment has several limitations,

1. Many studies focus on specific types of cognitive biases, such as confirmation bias, self-efficacy, social pressure…. etc.
2. While psychological studies often examine the impact of biases on individual performance, there's been limited focus on how these biases can influence auditors.

3. Because of the constrained sample size, it can be very challenging to draw a conclusion with respect to how cognitive bias affects professional judgment and audit quality.
4. Many studies are grounded in literature reviews or desk-based analyses. Such approaches primarily rely on existing data, scholarly articles, reports, and other published materials to synthesize which do not yield direct empirical evidence through experiments, observations, surveys, or interviews.
5. While there is a growing body of literature on cognitive bias in accounting and auditing, there is less research focused on the prevention, mitigation, and management of cognitive bias in the audit profession, this could be an area of future research.
6. Most of the current research on the impact of cognitive biases are conducted in developed countries, so more evidence is needed from developing countries. Cognitive biases might manifest differently across different cultures.

For the foregoing reasons, more research is required to gain a comprehensive understanding of the effect of cognitive biases from one side and professional judgment and audit quality from the other side. Also, try to come up with different strategies and techniques to overcome such biases.

Based on the above discussion, the researcher can formulate the research main hypothesis as follows:

H1: There is a negative relationship between cognitive biases and the quality of auditors' professional judgment.

While conducting an audit, Auditors make vital judgments and choices which can be adversely affected by a range of cognitive biases, thereby compromising the quality of their work.. In this study, the researcher will consider only the four cognitive biases and their impact on auditor's professional judgment and audit quality.

Self-serving bias

Self serving bias is one of the common cognitive biases that has received attention for study (Abatecola et al. 2018). As defined by Miller and Rose (1975), self- serving bias describes a tendency where people tend to attribute favorable results to personal variables (such as talent) and unfavorable results to outside variables (such as challenging tasks). According to Allen et al. (2020), who conducted a meta-analysis (comprehensive review) of extensive amount of self-serving bias, self-serving bias occurs when individuals give themselves credit for success yet attributing outside causes to their shortcomings. This might be affecting people's actions and decisions negatively.

Heider (1958) is credited with coining the term 'Self-serving bias", noticing that people's actions, when faced with uncertain situations, are influenced by cognitive strategies meant to improve their own perceptions of themselves. To sustain and enhance their self-esteem, people might unconsciously utilize

self-serving bias to maintain an acceptable social profile. (Shanshan Wen, 2018)

Libby and Rennekamp (2012) demonstrate that individuals who are affected by self-serving biases tend to emphasize personal factors rather than external ones for success. This behavior increases confidence in their own abilities, which increases faith in their capabilities and their ability to make future decisions. (Cristofaro and Giardino, 2020) Self-serving bias improves how others see us publicly and preserves a positive self-view, according to Bradley (1978). Shanshan Wen (2018) suggests that people deploy this bias to keep up a publicly appealing image, which in turn bolsters their self-esteem. Consequently, people have a greater propensity to blame unfavorable outcomes on ambient conditions outside of their control rather than personal decisions when in communal situations compared to when in isolated situations.

Following the ideas of Bradley 1978 & Larwood and Whittaker, 1977, Mezulis et al. 2004 indicates that self-serving bias is regarded as an attribute that involve both boosting and safeguarding oneself by giving more credit than deserved for success and avoiding responsibilities for failures.

Another study by Larwood and Whittaker (1977) noted that people who fall into self-serving bias typically show an elevated degree of self confidence, which represents them as

more than they actually are. This leads to unrealistically optimistic future plans.

In auditing contexts, it is anticipated that self-serving bias will impair auditors' professional judgment significantly. Imagine an auditor conducting an audit to one of his/her clients. During the audit, he/she discovers some accounting errors that led to overstating revenue and affecting the fairness of the financial statements. When he/she is preparing his/her final audit report, the self-serving bias might affect how he/she is going to interpret his findings. So, the auditor is going to attribute his/her own skills to uncover the error. However, he/she might attribute the overstatement of revenue to internal controls weaknesses or the complex business environment.

Due to self-serving bias, auditors might credit their own capabilities and efforts for favourable and successful results while external factors will be blamed for unfavourable results. As a result, auditors will overvalue their contribution to successful audits and minimize their responsibilities for audit failure. This might compromise their judgments and cause overconfidence and overestimating their own abilities, than they actually are, which affect the overall audit quality eventually.

Based on the above discussion, the researcher aims to empirically examine the subsequent first sub-hypothesis:

$H1_a$: There is a negative relationship between self-serving bias and the quality of auditors' professional judgment.

Cognitive dissonance

Festinger introduced the theory of cognitive dissonance in 1954. The theory provides insights into how individuals handle conflicting beliefs. People have their own ideas about themselves and their society, formed from their cumulative life experience. When individuals obtain new information which is different from their own beliefs, they might react by sticking to their original beliefs, changing their own ideas, or trying to blend old and new ideas. (Puspitarani and Mapuasari, 2020)

So, cognitive dissonance might occur when we gain new information that conflict with our current views. When people learn something new, they try to lessen this dissonance by changing their original thoughts. However, if these thoughts are firmly held, they will look for other alternatives. (Klein and McColl, 2019)

Conformity bias is one possible way to lessen this discomfort by seeking information that support our existing expectations, giving more importance to confirming information rather than contradictory information or pay more attention to confirming facts and handle uncertain information as supporting our prior expectations. (Russo and Schoemaker, 2002)

According to the cognitive theory, auditors might feel conflicted when they find errors in financial statements. In this case, they need to decide whether to disclose the issue, how much information to share, and what the right judgment is.

Auditors might choose not to disclose the problem, or they can continue focusing on the problem trying to obtain more information or taking further actions which will help to release their dissonance. (Puspitarani and Mapuasari, 2020)

Consider an auditor who is conducting an audit for an old client. The auditor has faith in the client management, as he has been working with them for many years. While he/she is performing audit procedures to discover some earning management indicators. There is a conflict between the evidence his existing faith. The auditor might be confused about the optimal course of action. The auditor might ignore the whole issue, claiming that they are temporary to maintain their faith in client management. However, this bias will affect their judgment causing less thorough investigation. This shows how auditors may choose their own beliefs over conflicted evidence due to the effect of cognitive dissonance.

Based on the above discussion, the researcher aims to empirically examine the subsequent second sub-hypothesis:

$H1_b$: There is a negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment.

Jumping to conclusion bias

The 'jumping to conclusions' phenomenon is defined by So et al. (2016) as the tendency to draw firm conclusions in the absence of sufficient and appropriate facts. The jumping to

conclusion bias, which has received considerable research, is a well-known phenomenon observed in people who have significant delusions and paranoid thinking (Huq et al., 1988; Garety and Freeman, 2013; So et al., 2010). Cognitive theories regarding dilutional beliefs suggests that people are more likely when the draw conclusions too rapidly based on inadequate knowledge (Garety and Freeman, 2013). This might lead to inaccurate conclusions which could contribute to delusions (McLean et al., 2017). After developing a bias, people tend to support their delusional thoughts, resisting any new information and exhibiting strong confidence in their decisions (Johnstone et al., 2017). A recent study by Lincoln et. al. (2010) suggests that jumping to conclusions is developed as a coping mechanism in response to stress. Additionally, Bensi and Giusberti (2007) noted that highly anxious individuals often perceive greater risk of adverse events in ambiguous situations, leading them to jump to conclusions as a way to alleviate their anxiety.

In auditing, jumping to conclusion is among the most frequent cognitive biases that might affect auditors' ability to make decisions and to draw accurate conclusions with respect to financial statements integrity. This bias is when auditors make decisions or judgments relying on little evidence to support them (Maradona, 2020).

International Standard on Auditing (ISA) 500, Audit Evidence, clarifies that it is auditor responsibility to create and

conduct procedures to get enough evidence to help them reaching a rational conclusion for their opinion (ISA 500 Audit Evidence, 2009). This suggest that gathering enough audit is very crucial to ensure the audit quality. However, in some circumstances, auditors might deviate from this standard by relying on limited evidence to reach an audit decision (Maradona, 2020), specifically when they are under time or deadline pressure. (Svanstrom, 2016)

Even if overall audit procedures are planned before fieldwork, The feeling of time pressure might exist. This could happen due to unexpected heavy workloads, delay in client response when asking for information, or any other unexpected factors might affect the process of collecting audit evidence. (Maradona, 2020).

Thus, conducting an audit involves substantial audit work, and when there is not enough time dedicated to gathering and assessing audit evidence, the overall quality audit procedures may be negatively impacted. (Svanstrom, 2016)

Based on the above discussion, the researcher aims to empirically examine the subsequent third sub-hypothesis:

$H1_c$: There is a negative relationship between jumping to conclusion bias and the quality of auditors' professional judgment.

Sunk cost fallacy bias:

"'We can't stop now given the time and resources we've already invested' illustrates a scenario where an individual persists in a particular path or strategy due to the sunk costs, instead of considering the prospective value or benefit of continuing that action" (Tucker and Alewine, 2021). According to Arks and Blumer (1985), sunk cost fallacy is defined as the propensity to stick to a particular project after committing resources like money, time, or effort. In their study, Brody et al. (2022) explain that the sunk cost bias occurs when individuals continue with an action that no longer makes sense, simply because they have already invested significant time and effort into it. They also prove that this bias can impact the fraud examiner professional judgment negatively. The sunk cost fallacy occurs when people relay on past investment not future benefits to make decisions about their future investment. Competent and qualified decision makers often relay on future outcomes rather than on expenses that have already spent on order to reach out reasonable decisions. (Strough et al., 2014)

According to economic theory, decision makers should solely consider anticipated future benefits and losses when making decisions, as historical sunk costs have no effect on the intended outcomes of the current decision. (Dijkstra and Hong., 2019)

The sunk cost effect is simulated by the adverse emotional reactions associated with the potential of unsuccessful

investments or financial losses. People are willing to accept the possibility of additional loss that continued investing may bring after having paid all previous costs. (Zeelenberg and Van Dijk, 1997). The sunk cost fallacy can be regarded as a mistake or a flawed approach.

Pertaining to auditing, imagine a scenario where an auditor is assigned an audit for a big corporation. As they begin their audit, they realized that a specific audit procedure failed to achieve the expected results. The auditor now has a choice to make. They have invested significant time, money, and effort on that procedure. They have been working with several departments for many weeks trying to collect their audit evidence. The auditor chooses to stick to that procedure despite being aware of its inefficiency due to the sunk cost fallacy. The idea of starting with a new audit procedure seems to be daunting, and they hope if they are investing more in the existing procedure the results will eventually improve. A rational decision would be to acknowledge the inefficiencies of the current audit procedure, cut the losses associated with sunk cost and start thinking about a new effective audit procedure. However, the psychological trap of the sunk cost fallacy persuades the auditor to continue using the less-than ideal strategy, which eventually delays the audit process and may compromise the audit findings.

Based on the above discussion, the researcher aims to empirically examine the subsequent fourth sub-hypothesis:

$H1_d$: There is a negative relationship between sunk cost fallacy bias and the quality of auditors' professional judgment.

Research Methodology:

1- Research community:

The research community is defined as all the components of the phenomenon studied by the researcher, and based on the research problem and its objectives, the target community consists of those working in the audit function. The subject of the study is: (audit partner - audit manager - senior auditor supervisor - employee auditor - trainees), as follows: Shown in the following table.

Table No. (1)

Distribution of members of the research community in the place of study (n=250)

Authority name	the number	The ratio%
Audit Partner	80	32.0%
Audit Manager	65	26.0%
Audit Senior or Supervisor	35	14.0%
Staff Auditor	40	16.0%
Interns	30	12.0%
Total number of auditors studied	250	100%

Source: Prepared by the researcher

Based on the previous table, the percentage of the audit partner reached (32.0%) and the percentage of the audit manager reached (26.0%), while the percentage of the audit expert or

supervisor reached (14.0%), the percentage of the employee auditor reached (40.0%), and finally the percentage of trainees was (30.0). %) All of this is from the number of members of the research community, with a total of (250 individuals)

2-The actual original sample:

Table No. (2)

Questionnaires distributed, returned, excluded, and response rate.

Statement	research community	The research sample	Distributed forms	Valid refund forms	Excluded forms	Actual response rate*
Audit Partner	80	55	55	41	14	74.5%
Audit Manager	65	45	45	33	12	73.33%
Audit Senior or Supervisor	35	20	20	17	3	85.0%
Staff Auditor	40	20	20	16	4	80.0%
Interns	30	12	12	11	1	91.7%
Total	250	152	152	118	34	78.0%

***The retrieved questionnaires suitable for analysis are divided by the research sample**

Source: Prepared by the researcher

The researcher used a stratified random sampling method according to the auditors, where (152) survey lists were distributed to the research community, and (118) survey lists

were recovered, at a rate of (78%). A number of (34) questionnaires were excluded due to incompleteness, so that the questionnaires that were analyzed were (118).

The sample size was calculated from the following equation:

$$n = \left(\frac{Z}{2m} \right)^2 \qquad (1)$$

where:

Z: The standard value corresponding to a known level of significance (for example: Z=1.96 for a level of significance).

m: marginal error: expressed in decimal notation

The sample size in the case of final populations is corrected from the equation:

$$n_{\text{المُعَدّل}} = \frac{nN}{N + n - 1} \qquad (2)$$

Where N represents the population size

Using equation (1) we find that the sample size is equal to:

$$n = \left(\frac{1.96}{2 \times 0.05} \right)^2 \cong 384$$

Since the research population = 250N, the sample size adjusted using equation (2) is equal to:

$$n_{\text{المُعَدّل}} = \frac{384 * 250}{250 + 384 - 1} \cong 152$$

Therefore, the appropriate sample size in this case is at least 152.

3- Study tool: A survey has been prepared

Independent variables "X"

1- Self-serving bias.

2- Cognitive dissonance.

3- Jumping to conclusion bias.

4- The sunk cost fallacy.

Dependent variable "Y": Quality of the auditor's professional judgment

A five-point Likert scale was used to measure the respondents' responses according to the following table:

Table No. (3)

Likert scale for answering question items.

Category	Very agree	Agree	neutral	not agree	Very disagree
Class	5	4	3	2	1

Source: Prepared by the researcher, based on a Likert scale.

4-Results of the parametric analysis of the research axes

First: Results of the parametric analysis of the axis (cognitive biases) Independent Variable – 4 components

Component one: Auditor Self-Serving Bias:

Table No. (4)

Saturation coefficient for auditor self-service bias domain

M	Paragraph	Saturation coefficient
1	Some Auditors might overestimate their own skills and abilities when reflecting on their professional judgments	0.590
2	Some Auditors may unintentionally downplay their role in negative outcomes of their professional judgments and attribute them to external circumstances.	0.583
3	Sometimes it might be hard to admit your contribution to undesirable outcomes in your professional life	0.535
4	Auditors might be more inclined to remember the times when their expertise led to successful audits rather than the times when external factors contributed.	0.431
5	Auditors might unconsciously favor interpretations that benefit their own interests	0.644
6	Negative feedback from stakeholders is often a result of them not understanding the audit complexities.	0.687
7	Auditors sometimes attribute negative outcomes of their professional judgments to external circumstances.	0.496

It appears from the previous table that the paragraphs it includes are for the field of auditor self-service bias, as it was shown that it includes all paragraphs of the field (7), and no paragraph was deleted, and this means that there is consistency between all the paragraphs.

Component two: Auditor Cognitive Dissonance

Table No. (5)

Saturation factor, field of cognitive dissonance, references

M	Paragraph	Saturation coefficient
1	When professional judgments conflict with pre-existing beliefs or expectations, individuals might experience discomfort.	0.763
2	It's possible for professionals, including auditors, to be influenced by existing beliefs when interpreting evidence.	0.711
3	Some auditors might ignore information that challenges their current beliefs during the auditing process.	0.538
4	Some auditors might unconsciously favor information that supports their existing beliefs.	0.663
5	When faced with ambiguous or unclear evidence during the audit process, auditors might interpret it in a way that supports their initial hypothesis	0.637
6	When new evidence contradicts their initial conclusions, auditors might find it hard to revise their original judgment.	0.779
7	During audits, auditors might come across information that might not align with my prior understanding of a situation.	0.738

It appears from the previous table that the paragraphs included in the field of cognitive dissonance are references, as it was shown that it includes all paragraphs of the field (7), and no paragraph was deleted, and this means that there is consistency between all the paragraphs.

Component three: Jumping to Conclusion Bias.

Table No. (6)

Saturation coefficient of field jump to conclusion bias.

M	Paragraph	Saturation coefficient
1	In some cases, auditors can draw conclusions based on a preliminary set of evidence.	0.718
2	Auditors have mentioned that in times of urgency to finalize reports, they sometimes feel pressured to draw early conclusions	0.632
3	Auditors may give initial weight to the earliest information they receive during their decision-making process.	0.734
4	Auditors may sometimes reach conclusions more quickly when experiencing notable pressure from audit clients.	0.816
5	During an audit, auditors may lean toward a specific interpretation in complex situations.	0.789
6	Auditors can form decisions during an audit based on the preliminary evidence they collect.	0.762
7	In some audits, an initial piece of evidence can influence the direction of their audit process	0.719

It appears from the previous table that the paragraphs included in the field of jumping to conclusion are biased, as it was shown that it includes all the paragraphs of the field (7), and no paragraph was deleted, and this means that there is consistency between all the paragraphs.

Component four: Sunk Cost Fallacy

Table No. (7)

Factor saturation the sunk cost fallacy

M	Paragraph	Saturation coefficient
1	Auditors might continue pursuing a course of action, even if new information suggests it's not the most effective choice, due to previously committed resources	0.663
2	The time and resources I've already invested play a role in my decision-making process, even when new evidence is presented.	0.634
3	It's challenging for me to switch to a new audit strategy after having invested substantially in the current one.	0.701
4	If I've invested a lot of effort in an audit method, I usually finish it.	0.796
5	The more time auditors spend on a specific audit procedure, the harder it becomes for me to abandon it.	0.635
6	The longer auditors have been using a particular audit technique, the more they feel it should be given a chance to prove its worth.	0.590
7	The thought of all the resources that would "go to waste" influences my decision to continue with an audit procedure.	0.473

It appears from the previous table that the paragraphs included in the sunk cost fallacy, as it was shown that it includes all the paragraphs in the field (7), and no paragraph was deleted, and this means that there is consistency between all the paragraphs...

Second: The results of the practical analysis of the second axis (the dependent variable) the quality of professional judgment

Table No. (8)

Saturation coefficient for the field of professional judgment quality

M	Paragraph	Saturation coefficient
1	An auditor needs to remain objective and unbiased when evaluating the evidence and drawing conclusions about the financial statements.	0.599
2	Considering all potential outcomes is crucial for decision-making, as it allows auditors to consider various angles to a specific situation.	0.563
3	Recognizing the complexities inherent in an audit, as well as the risks associated with various transactions and judgments, is critical. This helps auditors determine where to focus their efforts and how best to approach potential issues.	0.630
4	The quality of judgment depends on how well an auditor uses the evidence, understands its relevance, and interprets its implications.	0.682
5	Making judgments that are ethical and in line with professional standards is vital to maintain the credibility and reliability of the audit process.	0.748
6	Professional skepticism involves a questioning mindset and a critical assessment of audit evidence. It's a cornerstone of quality audit judgment.	0.785
7	Auditor's ability to correctly interpret and apply auditing standards is crucial for the judgment quality.	0.587
8	Auditors who can learn from past experiences, adapt to new situations, and stay updated with the latest industry trends and regulations are better positioned to make quality judgments.	0.629
9	Auditors may credit positive results to their skills and blame external factors for negative outcomes, which might sway their impartial judgment.	0.698

10	An auditor's ability to assess all possible outcomes might be affected by the self- serving bias.	0.650
11	An auditor's tendency to credit successes to themselves and failures to external events may influence their understanding of audit complexities and risks	0.726
12	Self-serving bias can impact auditors' use of evidence by causing them to favor evidence that aligns with their personal interests or desired outcomes.	0.659
13	Self-serving bias can challenge auditors' ethical conduct by making them prioritize personal or client interests, compromising their impartial evaluations.	0.764
14	Self-serving bias can diminish auditors' skepticism and critical thinking by prompting them to ignore or justify red flags that conflict with their personal .interests	0.824
15	Past investments can cause auditors to question less, potentially affecting their thorough assessment of current projects.	0.769
16	Past decisions and investments can influence auditors' views, making them hesitant to adapt to updated standards.	0.698
17	Cognitive dissonance might affect auditors' objectivity by causing discomfort with conflicting data, pushing them to favor existing beliefs	0.749
18	Cognitive dissonance might cause auditors to favor options that match their beliefs, rather than evaluating all possibilities thoroughly.	0.683
19	Cognitive dissonance may cause auditors to reconcile conflicting beliefs by oversimplifying audit complexities or downplaying risks associated with certain transactions and judgments.	0.715
20	Cognitive dissonance might make auditors prioritize evidence aligning with their beliefs and overlook opposing data, affecting the thoroughness of their judgment.	0.713
21	The sunk cost fallacy can make individuals weigh past investments too heavily, distracting from present data and resulting in skewed decisions and evaluations.	0.506

22	Cognitive dissonance might make auditors dismiss or justify warning signs that contradict their initial perceptions.	0.478
23	Commitment to past investments might pressure auditors into sticking with ineffective strategies, possibly challenging their duty to give impartial advice.	0.576
24	Focusing too much on past investments can lead auditors to prioritize old data over new, relevant evidence	0.624
25	Jumping to conclusion might affect objectivity, as it leads auditors to make assumptions or draw conclusions based on limited information.	0.809
26	Jumping to conclusions can cause auditors to quickly choose an option without analyzing all alternatives thoroughly.	0.774
27	Jumping to conclusions might stop auditors from fully understanding audit complexities and risks, leading to potential overlooks.	0.767
28	The jump to conclusions tendency can make auditors decide before examining all evidence, potentially giving incomplete or incorrect evaluations.	0.774
29	Jumping to conclusions can result in quick decisions with incomplete data, potentially overlooking ethical aspects and causing unforeseen issues.	0.639
30	Jumping to conclusions can lead individuals to quickly settle on initial beliefs, reducing their inclination to question and analyze information deeply.	0.762

It appears from the previous table that it includes all the paragraphs in the field of quality of professional judgment (30) and no paragraph has been deleted, and this means that there is consistency between all the paragraphs.

5-Validity of the study tool (survey list)

Validity of the survey list means "that the questionnaire measures what it was designed to measure," and validity means

"that the survey includes all the elements that must be included in the analysis on the one hand, and the clarity of its paragraphs and vocabulary on the other hand, so that it is understandable to everyone who uses it."

The validity of the survey list was confirmed in two ways:

a. The veracity of the arbitrators' opinions "apparent honesty":

The honesty of the arbitrators means that "the researcher chooses a number of arbitrators who specialize in the field of the phenomenon or problem that is the subject of the study." The survey list was presented to (5) arbitrators who are faculty members at universities, to seek guidance from their opinions regarding the extent to which the questionnaire paragraphs are appropriate for their purpose, and to ensure the ability of the survey list to achieve the purpose for which it was developed. The researcher responded to the opinions of the arbitrators and made the necessary deletions and amendments considering the proposals presented, the clarity and coherence of the questionnaire's paragraphs, the quality of the questions and their compatibility with the subject of the study to investigate:

- Suitability of the tool for the purpose for which it was designed.
- Correct wording and clarity of vocabulary.

Deleting or adding any vocabulary that the arbitrators deem appropriate or amending it. Considering the comments

made by the arbitrators, the necessary amendments were made for the questionnaire to take its final form. It included amending, deleting, or adding new paragraphs and the names of the arbitrators as shown.

b. Validity of the scale

First: Internal Validity

Internal consistency means the extent to which each paragraph of the survey list is consistent with the field to which this paragraph belongs. The researcher calculated the internal consistency of the survey list by calculating the correlation coefficients between each paragraph of the fields of the survey list that have the same "five-point Likert" scale. And the overall score for the field itself.

The following table No. (10) shows the correlation coefficient between each item of the available "Strategic Intelligence" field and the overall score for the field, which shows that the correlation coefficients shown are significant at a significant level ($\alpha \geq 0.05$), and thus the field is considered true to what it was designed to measure.

Table No. (9)

The correlation coefficient between each item of the independent variable axis

Paragraph	Pearson correlation coefficient	Probability value (Sig.)
1- **Self-Serving Bias (Independent Variable):**		
1- Some Auditors might overestimate their own skills and abilities when reflecting on their professional judgments	0.700	*0.000
2- Some Auditors may unintentionally downplay their role in negative outcomes of their professional judgments and attribute them to external circumstances.	0.713	*0.000
3- Sometimes it might be hard to admit your contribution to undesirable outcomes in your professional life	0.612	*0.000
4- Auditors might be more inclined to remember the times when their expertise led to successful audits rather than the times when external factors contributed.	0.601	*0.029
5- Auditors might unconsciously favor interpretations that benefit their own interests	0.777	*0.000
6- Negative feedback from stakeholders is often a result of them not understanding the audit complexities.	0.629	*0.000
7- Auditors sometimes attribute negative outcomes of their professional judgments to external circumstances.	0.702	*0.005
2-Cognitive dissonance (Independent Variable):		
1- When professional judgments conflict with pre-existing beliefs or expectations, individuals might experience discomfort.	0.601	*0.004
2- It's possible for professionals, including auditors, to be influenced by existing beliefs when interpreting evidence.	0.713	*0.022
3- Some auditors might ignore information that challenges their current beliefs during the auditing process.	0.799	*0.005
4- Some auditors might unconsciously favor information that supports their existing beliefs.	0.604	*0.000
5- When faced with ambiguous or unclear evidence during the audit process, auditors might interpret it in a way that supports their initial hypothesis	0.588	*0.000
6- When new evidence contradicts their initial conclusions, auditors might find it hard to revise their original judgment.	0.851	*0.000

7- During audits, auditors might come across information that might not align with my prior understanding of a situation.	0.843	*0.000
3-Jumping to conclusion (Independent Variable):		
1- In some cases, auditors can draw conclusions based on a preliminary set o evidence.	0.741	*0.000
2- Auditors have mentioned that in times of urgency to finalize reports, they sometimes feel pressured to draw early conclusions	0.579	*0.000
3- Auditors may give initial weight to the earliest information they receive during their decision-making process.	0.831	*0.000
4- Auditors may sometimes reach conclusions more quickly when experiencing notable pressure from audit clients.	0.843	*0.000
5- During an audit, auditors may lean toward a specific interpretation in complex situations.	0.811	*0.000
6- Auditors can form decisions during an audit based on the preliminary evidence they collect.	0.837	*0.000
7- In some audits, an initial piece of evidence can influence the direction of their audit process	0.726	*0.000
4-Sunk cost fallacy (Independent Variable):		
1- Auditors might continue pursuing a course of action, even if new information suggests it's not the most effective choice, due to previously committed resources	0.744	*0.000
2- The time and resources I've already invested play a role in my decision-making process, even when new evidence is presented.	0.683	*0.000
3- It's challenging for me to switch to a new audit strategy after having invested substantially in the current one.	0.673	*0.002
4- If I've invested a lot of effort in an audit method, I usually finish it.	0.738	*0.006
5- The more time auditors spend on a specific audit procedure, the harder it becomes for me to abandon it.	0.878	*0.000
6- The longer auditors have been using a particular audit technique, the more they feel it should be given a chance to prove its worth.	0.802	*0.000
7- The thought of all the resources that would "go to waste" influences my decision to continue with an audit procedure.	0.659	*0.008

***The correlation is statistically significant at the significance level (0.05≥ α).**

****The correlation is statistically significant at the significance level (0.01≥ α).**

The following table shows the correlation coefficient between each item in the "Reengineering" domain and the overall score for the domain, which shows that the correlation coefficients shown are significant at a significant level ($0.05 \geq \alpha$), and thus the domain is considered true to what it was designed to measure.

Table No. (10)

The correlation coefficient between each paragraph of the "Professional Judgment" axis (the dependent variable)

Paragraph	Pearson correlation coefficient	Probability value (Sig.)
1- Auditors might continue pursuing a course of action, even if new information suggests it's not the most effective choice, due to previously committed resources	0.763	*0.003
2- The time and resources I've already invested play a role in my decision-making process, even when new evidence is presented.	0.666	*0.005
3- It's challenging for me to switch to a new audit strategy after having invested substantially in the current one.	0.707	*0.004
4- If I've invested a lot of effort in an audit method, I usually finish it.	0.751	*0.001
5- The more time auditors spend on a specific audit procedure, the harder it becomes for me to abandon it.	0.870	*0.000
6- The longer auditors have been using a particular audit technique, the more they feel it should be given a chance to prove its worth.	0.778	*0.002
7- The thought of all the resources that would "go to waste" influences my decision to continue with an audit procedure.	0.967	*0.009
8- Auditors who can learn from past experiences, adapt to new situations, and stay updated with the latest industry trends and regulations are better positioned to make quality judgments.	0..711	*0.003

9- Auditors may credit positive results to their skills and blame external factors for negative outcomes, which might sway their impartial judgment.	0.775	*0.005
10- An auditor's ability to assess all possible outcomes might be affected by the self- serving bias.	0.813	*0.001
11- An auditor's tendency to credit successes to themselves and failures to external events may influence their understanding of audit complexities and risks	0.750	*0.006
12- Self-serving bias can impact auditors' use of evidence by causing them to favor evidence that aligns with their personal interests or desired outcomes.	0.929	*0.000
13- Self-serving bias can challenge auditors' ethical conduct by making them prioritize personal or client interests, compromising their impartial evaluations.	0.752	*0.004
14- Self-serving bias can diminish auditors' skepticism and critical thinking by prompting them to ignore or justify red flags that conflict with their personal .interests	0.725	*0.009
15- Past investments can cause auditors to question less, potentially affecting their thorough assessment of current projects.	0.630	*0.002
16- Past decisions and investments can influence auditors' views, making them hesitant to adapt to updated standards.	0.774	*0.020
17- Cognitive dissonance might affect auditors' objectivity by causing discomfort with conflicting data, pushing them to favor existing beliefs	0.710	*0.022
18- Cognitive dissonance might cause auditors to favor options that match their beliefs, rather than evaluating all possibilities thoroughly.	0.767	*0.000
19- Cognitive dissonance may cause auditors to reconcile conflicting beliefs by oversimplifying audit complexities or downplaying risks associated with certain transactions and judgments.	0.791	*0.000
20- Cognitive dissonance might make auditors prioritize evidence aligning with their beliefs and overlook opposing data, affecting the thoroughness of their judgment.	0.681	*0.013

21- The sunk cost fallacy can make individuals weigh past investments too heavily, distracting from present data and resulting in skewed decisions and evaluations.	0.530	*0.000
22- Cognitive dissonance might make auditors dismiss or justify warning signs that contradict their initial perceptions.	0.711	*0.003
23- Commitment to past investments might pressure auditors into sticking with ineffective strategies, possibly challenging their duty to give impartial advice.	0.702	*0.001
24- Focusing too much on past investments can lead auditors to prioritize old data over new, relevant evidence	0.722	*0.008
25- Jumping to conclusion might affect objectivity, as it leads auditors to make assumptions or draw conclusions based on limited information.	0.591	*0.008
26- Jumping to conclusions can cause auditors to quickly choose an option without analyzing all alternatives thoroughly.	0.703	*0.001
27- Jumping to conclusions might stop auditors from fully understanding audit complexities and risks, leading to potential overlooks.	0.597	*0.006
28- The jump to conclusions tendency can make auditors decide before examining all evidence, potentially giving incomplete or incorrect evaluations.	0.701	*0.002
29- Jumping to conclusions can result in quick decisions with incomplete data, potentially overlooking ethical aspects and causing unforeseen issues.	0.702	*0.001
30- Jumping to conclusions can lead individuals to quickly settle on initial beliefs, reducing their inclination to question and analyze information deeply	0.690	*0.039

The correlation is statistically significant at the significance level (0.05≥ α).
****The correlation is statistically significant at the significance level (0.01≥ α).**

Second: Structure Validity

Construct validity is one of the measures of the validity of the tool, which measures the extent to which the goals that the

tool wants to reach are achieved and shows the extent to which each field of study is related to the overall score of the items in the survey list.

The following table shows that all correlation coefficients in all areas of the survey list are statistically significant at a significant level ($0.05 \geq \alpha$), and thus all areas of the survey list are considered true to what they were designed to measure.

Table No. (11)

The correlation coefficient between the score of each field of the survey list and the total score of the survey list

Paragraph	Pearson correlation coefficient	Probability value (Sig.)
Self-Serving Bias	0.633	*0.000
Cognitive dissonance	0.773	*0.003
Jumping to conclusion	0.774	*0.003
Sunk cost fallacy	0.840	*0.000
Independent variable (cognitive bias)	0.592	*0.000
Dependent variable (quality of professional judgment)	0.583	*0.000

***The correlation is statistically significant at the significance level ($0.05 \geq \alpha$).**
****The correlation is statistically significant at the significance level ($0.01 \geq \alpha$).**

6- Reliability of the study tool (survey list).

What is meant by the reliability of the study tool (survey list) is that the survey list gives the same results if it is re-applied several times in a row. It also means to what degree the scale gives close readings each time it is used, or what is the degree of its consistency, harmony and continuity when used repeatedly in Different times.

The researcher verified the stability of the study survey list through Cronbach's Alpha Coefficient, and the results were as shown in the following table.

Table No. (12)

Cronbach's alpha coefficient to measure the reliability of the survey list.

The component	Number of paragraphs	Cronbach's alpha coefficient
Self-Serving Bias	**7**	0.850
Cognitive dissonance	**7**	0.778
Jumping to conclusion	**7**	0.857
Sunk cost fallacy	**7**	0.753
Independent variable (cognitive bias)	**28**	0.904
Dependent variable (quality of professional judgment)	**30**	0.903
	58	0.939

The results shown in the previous table showed that the value of Cronbach's alpha coefficient was high for each field, with the independent variable (cognitive bias) ranging between (0.857-0.753), and the dependent variable (quality of professional judgment) (0.903), while it reached (0.939) for all items in the survey list. This means that the reliability is high and statistically significant. Thus, the survey list in its final form is distributable, and the researcher has confirmed the validity and reliability of the research survey list, which makes him confident of the validity of the survey list and its suitability to analyze the results, answer the research questions, and test its hypotheses.

7-Statistical description of the research sample according to personal variables

The following is a presentation of the characteristics of the research sample according to personal variables:

Table No. (13)
Distribution of members of the research community according to personal variables (n=250)

Personal variables	The number	Percentage%
Position level		
Audit Partner	80	32.0%
Audit Manager	65	26.0%
Audit Senior or Supervisor	35	14.0%
Staff Auditor	40	16.0%
Interns	30	12.0%
Total	250	100%
Gender		
Male	193	77.2
Female	157	62.8
Total	250	100%
Age		
Less than 30	5	2%
30-40	60	24%
41-50	70	28%
51-60	80	32%
More than 60	35	14%
Total	250	100%
Highest Academic Degree		
Bachelor	36	14.4%
MSc	28	11.2%
PhD	17	6.8%
Other:	169	67.6%
Total	250	100%

Years of Experience		
Less than 5 years	10	4%
5-10 years	35	14%
11-15 years	75	30%
More than 15 years	130	52%
Total	250	100%
Do you hold any professional Credentials		
No	12	4.8%
Certified Public Accountant (CPA	45	18%
Certified Internal Auditor (CIA	20	8%
Certified Fraud Examiner (CFE	59	23.6%
Other:	114	46.8%
Total	250	100%

Source: Prepared by the researcher

8- Presentation and analysis of the cognitive biases survey items:

First: Cognitive biases

Frequencies and ratios were used to determine the cognitive biases used by auditors. The results are shown in the following table:

Table No. (14)
Cognitive biases used by auditors.

Statement	research community	Actual response rate*	Ranking
Self-Serving Bias	24	20.31%	3
Cognitive dissonance	25	21.19%	2
Jumping to conclusion	22	18.644%	1
Sunk cost fallacy	47	39.833%	4
Total	118	100%	

It is clear from the results of the previous table that the most common types of cognitive biases used by auditors are as follows:

The paragraph "Self-serving bias" came in first place, then the paragraph "Cognitive dissonance" came in second place, the paragraph "Self-serving bias" came in third place, then "The sunk cost fallacy" came in fourth and final place.

Second: Analysis of the areas (dimensions) available for the use of cognitive biases.

1- Analysis of paragraphs in the field of "auditor's self-service bias."

Indicators of auditor self-serving bias:

Below is a presentation of the most important results of the statistical analysis for the paragraphs of the first dimension, "auditor self-service bias," which is considered one of the dimensions of "cognitive biases." The frequency of observations, the arithmetic mean, and the standard deviation for each dimension were calculated, and the parametric test (one-sample T-test) was used. To find out whether the response level has reached the average level (3) or not.

If the Sig. (P-value) is greater than the significance level ($0.05 \geq \alpha$), then in this case the opinions of the research community are close to the average value, which is (3), and if the Sig. (P-value) is less than the significance level ($0.05 \geq \alpha$). In this case, it is possible to determine whether the average answer is more or less than the average value, through the sign of the test value. If the sign is positive, it means that the arithmetic average of the answer is more than the average value (3) and vice versa, and the following table: -

Table (15)
The arithmetic mean, standard deviation, and probability value (Sig.) for each item in the field of "auditor self-service bias"

Paragraph	SMA	standard deviation	Test value	Probability value (Sig.)	Ranking	General trend
1- Some Auditors might overestimate their own skills and abilities when reflecting on their professional judgments	3.08	1.04	25.17	*0.000	3	neutral
2- Some Auditors may unintentionally downplay their role in negative outcomes of their professional judgments and attribute them to external circumstances.	2.89	0.97	31.86	*0.000	5	neutral
3- Sometimes it might be hard to admit your contribution to undesirable outcomes in your professional life	3.03	1.06	31.044	*0.000	4	neutral
4- Auditors might be more inclined to remember the times when their expertise led to successful audits rather than the times when external factors contributed.	3.33	1.14	31.71	*0.000	2	neutral

5- Auditors might unconsciously favor interpretations that benefit their own interests	2.83	1.19	25.77	*0.000	6	neutral
6- Negative feedback from stakeholders is often a result of them not understanding the audit complexities.	2.73	1.23	24.08	*0.000	7	neutral
7- Auditors sometimes attribute negative outcomes of their professional judgments to external circumstances.	3.43	1.26	29.653	*0.000	1	neutral
All paragraphs of the field together	3.046	0.853	38.779	*0.000	-----	neutral

***The correlation is statistically significant at the significance level (0.05≥ α).**

Looking at it, it is clear to us that the paragraphs of the first dimension, "auditor's self-service bias," include (7) statements, where the arithmetic mean for this field ranged between (2.73-3.43).

- In general, it can be said that the arithmetic mean is equal to (3.046 of the total score of 5), and the standard deviation is equal to (0.853), and the test value is (38.779%). This indicates that there is a neutral degree of agreement with the field items, so the field is considered "auditor self-service bias." "Statistically significant at the significance level (0.05≥ α). By members of the research community, which indicates that the average degree of

response to this area has exceeded the degree of neutrality, which is (3), and this means that there is agreement from the members of the study sample.

2-Analysis of paragraphs in the field of "Cognitive Dissonance for References": -

Table (16)

The arithmetic mean, standard deviation, and probability value (Sig.) for each paragraph of the auditor's cognitive dissonance field

Paragraph	SMA	standard deviation	Test value	Probability value (Sig.)	Ranking	General trend
1- When professional judgments conflict with pre-existing beliefs or expectations, individuals might experience discomfort.	2.42	1.34	19.61	*0.000	7	Very disagree.
2- It's possible for professionals, including auditors, to be influenced by existing beliefs when interpreting evidence.	2.65	1.02	28.36	*0.000	3	neutral
3- Some auditors might ignore information that challenges their current beliefs during the auditing process.	2.61	0.858	33.06	*0.000	4	neutral
4- Some auditors might unconsciously favor information that supports their existing beliefs.	3.19	1..06	32.60	*0.000	1	neutral

5-When faced with ambiguous or unclear evidence during the audit process, auditors might interpret it in a way that supports their initial hypothesis	2.52	0.940	29.07	*0.000	5	neutral
6- When new evidence contradicts their initial conclusions, auditors might find it hard to revise their original judgment.	2.49	1.11	24.44	*0.000	6	neutral
7- During audits, auditors might come across information that might not align with my prior understanding of a situation.	2.83	1.25	24.61	*0.000	2	neutral
All paragraphs of the field together	2.067	0.716	40.547	*0.000	----	neutral

***The correlation is statistically significant at the significance level (0.05≥ α).**

Looking at the table, it is clear to us that the paragraphs of the second dimension, "cognitive dissonance of auditors," include (7) statements. The arithmetic mean for this field ranged between (2.42-3.19).

- In general, it can be said that the arithmetic mean is equal to (2.067 of the total score of 5), and the standard deviation is equal to (0.716%), and the test value is (40.547), and this means that there is moderate degree of agreement by the sample members on the domain items, so it is considered a "domain" The reviewer's

cognitive dissonance is statistically significant at the significance level ($0.05 \geq \alpha$).

3- Analyzing paragraphs in the field of "jumping to conclusion bias."

Table (17)

The arithmetic mean, standard deviation, and probability value (Sig.) for each paragraph of the auditor's Jumping to conclusion bias field.

Paragraph	SMA	standard deviation	Test value	Probability value (Sig.)	Ranking	General trend
1-In some cases, auditors can draw conclusions based on a preliminary set of evidence.	3.026	1.03	34.59	*0.000	1	neutral
2- Auditors have mentioned that in times of urgency to finalize reports, they sometimes feel pressured to draw early conclusions	2.72	0. 98	30.23	*0.000	2	neutral
3- Auditors may give initial weight to the earliest information they receive during their decision-making process.	1.97	1.05	20.43	*0.000	3	Very disagree.
4- Auditors sometimes reach conclusions more quickly when experiencing notable pressure from audit clients.	1.66	0.94	19.28	*0.000	7	Very disagree.
5- During an audit, auditors may lean toward a specific interpretation in complex situations.	1.81	1.07	18.29	*0.000	6	Very disagree.

6-Auditors can form decisions during an audit based on the preliminary evidence they collect.	1.90	1.18	17.48	*0.000	4	Very disagree.
7- In some audits, an initial piece of evidence can influence the direction of their audit	1.87	1.10	18.53	*0.000	5	Very disagree.
All paragraphs of the field together	2.179	0.764	30.975	*0.000	----	neutral

***The correlation is statistically significant at the significance level (0.05≥ α).**

Looking at the table, it is clear to us that the paragraphs of the third dimension, "Conclusion to bias," have (7) statements. The arithmetic mean for this field ranged between (1.166-3.26).

- In general, it can be said that the arithmetic mean is equal to (2.179 of the total score of 5), and that the standard deviation is equal to (0.76%), and the test value is (30.975), and this means that there is agreement with a degree of neutral, that is, the average, by the sample members on the items in the field for that. The scope of the conclusion about bias is considered statistically significant at the significance level (0.05≥ α).

4-Analysis of paragraphs in the field of "Sunk Cost Fallacy."

Table (18)

The arithmetic mean, standard deviation, and probability value (Sig.) for each item in the field of Sunk Cost Fallacy"

Paragraph	SMA	standard deviation	Test value	Probability value (Sig.)	Ranking	General trend
1- Auditors might continue pursuing a course of action, even if new information suggests it's not the most effective choice, due to previously committed resources	3.34	1.11	32.64	*0.000	1	neutral
2- The time and resources I've already invested play a role in my decision-making process, even when new evidence is presented.	2.43	0.983	26.89	*0.000	3	neutral
3- It's challenging for me to switch to a new audit strategy after having invested substantially in the current one.	2.44	0.911	29.1	*0.000	2	neutral
4- f I've invested a lot of effort in an audit method, I usually finish it.	2.38	1.0	25.78	*0.000	4	neutral
5- The more time auditors spend on a specific audit procedure, the harder it becomes for me to abandon it.	2.20	1..09	21.95	*0.000	5	neutral

6- The longer auditors have been using a particular audit technique, the more they feel it should be given a chance to prove its worth.	1.86	1.11	18.14	*0.000	6	Very disagree.
7- The thought of all the resources that would "go to waste" influences my decision to continue with an audit procedure.	1.50	1.011	16.12	*0.000	7	Very disagree.
All paragraphs of the field together	2.307	0.655	38.240	*0.000	----	neutral

***The correlation is statistically significant at the significance level (0.05≥ α).**

Looking at it, it becomes clear to us that the paragraphs of the fourth dimension, "The Sunk Cost Fallacy," include (7) statements. The arithmetic mean for this field ranged between (1.50-3.34).

- In general, it can be said that the arithmetic mean is equal to (2.307 of the total score of 5), and the standard deviation is equal to (0.655%), and the test value is (38.240). This means that there is agreement with the degree of neutral mean by the sample members on the domain items, so it is considered a domain. "The sunk cost fallacy statistically significant at the significance level (0.05≥ α).

Third: Quality of professional judgment

Below is a presentation of the most important results of the statistical analysis for the items in the field of "Quality of Professional Judgment," where the frequencies of observations,

the arithmetic mean, and the standard deviation for each dimension were calculated. The parametric test (one-sample T-test) was also used to determine whether the response degree had reached the average degree. It is (3) or not

If the Sig. (P-value) is greater than the significance level ($0.05 \geq \alpha$), then in this case the opinions of the research community are close to the average value, which is (3), and if the Sig. (P-value) is less than the significance level ($0.05 \geq \alpha$). In this case, it is possible to determine whether the average answer is more or less than the average value, through the sign of the test value. If the sign is positive, it means that the arithmetic average of the answer is more than the average value (3) and vice versa. The table is the results of the analysis: -

Table (19)

The arithmetic mean, standard deviation, and probability value (Sig.) for each item in the "Quality of Professional Judgment" field.

Paragraph	SMA	standard deviation	Test value	Probability value (Sig.)	Ranking	General trend
1- An auditor needs to remain objective and unbiased when evaluating the evidence and drawing conclusions about the financial statements.	4.47	1.167	41.57	*0.000	3	Very agree
2- Considering all potential outcomes is crucial for decision-making, as it allows auditors to consider various angles to a specific situation.	2..39	1.25	32.08	*0.000	18	neutral

3- Recognizing the complexities inherent in an audit, as well as the risks associated with various transactions and judgments, is critical. This helps auditors determine where to focus their efforts and how best to approach potential issues.	2.89	1.052	29.83	*0.000	10	neutral
4- The quality of judgment depends on how well an auditor uses the evidence, understands its relevance, and interprets its implications.	2.65	0.990	29.10	*0.000	12	neutral
5- Making judgments that are ethical and in line with professional standards is vital to maintain the credibility and reliability of the audit process.	2.58	0.973	28.876	*0.000	14	neutral
6- Professional skepticism involves a questioning mindset and a critical assessment of audit evidence. It's a cornerstone of quality audit judgment.	2.41	1.006	25.98	*0.000	17	neutral
7- Auditor's ability to correctly interpret and apply auditing standards is crucial for the judgment quality.	2.61	1.005	28.23	*0.000	13	neutral
8- Auditors who can learn from past experiences, adapt to new situations, and stay updated with the latest industry trends and regulations are better positioned to make quality judgments.	3.61	1.525	25.72	*0.000	8	Very agree
9- Auditors may credit positive results to their skills and blame external factors for negative outcomes, which might sway their impartial judgment.	3.46	1.258	29.85	*0.000	9	neutral
10- An auditor's ability to assess all possible outcomes might be affected by the self- serving bias.	4.55	1.026	48.18	*0.000	2	Very agree.

11- An auditor's tendency to credit successes to themselves and failures to external events may influence their understanding of audit complexities and risks	4.72	0.783	65.47	*0.000	1	Very agree.
12- Self-serving bias can impact auditors' use of evidence by causing them to favor evidence that aligns with their personal interests or desired outcomes.	1.90	1.119	18.54	*0.000	22	not agree very
13- Self-serving bias can challenge auditors' ethical conduct by making them prioritize personal or client interests, compromising their impartial evaluations.	1.97	1.008	21.28	*0.000	21	not agree very
14- Self-serving bias can diminish auditors' skepticism and critical thinking by prompting them to ignore or justify red flags that conflict with their personal interests .	1.87	0.983	20.69	*0.000	25	not agree very
15- Past investments can cause auditors to question less, potentially affecting their thorough assessment of current projects.	1.76	0.967	19.81	*0.000	29	not agree very
16- Past decisions and investments can influence auditors' views, making them hesitant to adapt to updated standards.	1.79	0.968	20.06	*0.000	28	not agree very
17- Cognitive dissonance might affect auditors' objectivity by causing discomfort with conflicting data, pushing them to favor existing beliefs	4.01	1.429	30.47	*0.000	5	Very agree.
18- Cognitive dissonance might cause auditors to favor options that match their beliefs, rather than evaluating all possibilities thoroughly.	2.50	0.931	29.16	*0.000	15	Very agree.

19- Cognitive dissonance may cause auditors to reconcile conflicting beliefs by oversimplifying audit complexities or downplaying risks associated with certain transactions and judgments.	2.69	0.956	30.61	*0.000	11	neutral
20- Cognitive dissonance might make auditors prioritize evidence aligning with their beliefs and overlook opposing data, affecting the thoroughness of their judgment.	3.88	1.492	28.67	*0.000	6	Very agree.
21- The sunk cost fallacy can make individuals weigh past investments too heavily, distracting from present data and resulting in skewed decisions and evaluations.	2.45	1.075	24.75	*0.000	16	neutral
22- Cognitive dissonance might make auditors dismiss or justify warning signs that contradict their initial perceptions.	4.46	1.174	41.24	*0.000	4	Very agree.
23- Commitment to past investments might pressure auditors into sticking with ineffective strategies, possibly challenging their duty to give impartial advice.	2.19	1.023	23.30	*0.000	20	neutral
24- Focusing too much on past investments can lead auditors to prioritize old data over new, relevant evidence	1.84	1.012	19.73	*0.000	26	not agree very
25- Jumping to conclusion might affect objectivity, as it leads auditors to make assumptions or draw conclusions based on limited information.	1.83	1.119	17.76	*0.000	27	not agree very
26- Jumping to conclusions can cause auditors to quickly choose an option without analyzing all alternatives thoroughly.	1.89	1.131	18.16	*0.000	23	not agree very

27- Jumping to conclusions might stop auditors from fully understanding audit complexities and risks, leading to potential overlooks.	1.73	0.967	19.43	*0.000	30	not agree very
28- The jump to conclusions tendency can make auditors decide before examining all evidence, potentially giving incomplete or incorrect evaluations.	1.88	1.055	19.36	*0.000	24	not agree very
29- Jumping to conclusions can result in quick decisions with incomplete data, potentially overlooking ethical aspects and causing unforeseen issues.	2.38	1.496	17.30	*0.000	19	not agree. very
30- Jumping to conclusions can lead individuals to quickly settle on initial beliefs, reducing their inclination to question and analyze information deeply.	3.73	1.673	24.22	*0.000	7	Very agree.
All paragraphs of the field together	2.769	0.5766	52.177	*0.000	-----	neutral

***The correlation is statistically significant at the significance level (0.05≥ α).**

Looking at the table, it is clear to us that the items in the field of quality of professional judgment include (30) statements. The arithmetic mean for this field ranged between (1.73-4.72).

It is clear from the data of the previous table that the arithmetic mean for all items to achieve the quality of professional judgment is equal to (2.769, total score out of 5), standard deviation (0.0.576%), test value (52.177). Therefore, the items are considered statistically significant at the significance level (0.05≥ α). Which indicates that the average response score

has exceeded the average degree of agreement, which is (3). This means that there is agreement by the sample members on the items on the quality of professional judgment in general.

9- Testing research hypotheses

The validity of the hypothesis is verified by conducting tests, where the null hypothesis (H0), which assumes the absence of a statistically significant relationship/difference, is statistically tested against the alternative hypothesis (H1), which assumes the existence of a statistically significant relationship/difference, and the result is judged. The test is based on the value of the significance level calculated for the test (sing), where the null hypothesis is rejected and the alternative hypothesis is confirmed if the value of (sing) is less than the level of 0.05, and then it is said: The test is significant, which means that there is a real and statistically significant difference relationship, and it is done Accepting the null hypothesis if the value of (sing) is higher than the level of 0.05, we then conclude that there is no relationship/statistically significant differences.

The first sub-hypothesis:

There is no negative relationship between self-serving bias and the quality of auditors' professional judgment.

To confirm the validity of this hypothesis, the researcher analyzed the relationship between (self-serving bias and the quality of auditors' professional judgment), through One Way

Anova, "simple linear regression analysis," which aims to measure and test the extent of the influence of one independent variable on Dependent variable, in addition to its significance tests (t, f) and based on the Spss v. 25 program, where the results shown in the following table were obtained: -

Table No. (20)

Results of the "One Way Anova" test for the validity of the model

The field	Source of variance	Sum of squares	Degrees of freedom	Mean squares	"F" value	Significance level Sig
Self-Serving Bias	Between squares	1.952	6	1.952	6.129	0.015
	Within groups	36.953	111	0.3.19		
	the total	38.905	117			

The tabular "F" value at two degrees of freedom (111.6) and a significance level of 0.05 is equal to (6.129)

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the analysis of variance: the presence of a statistically significant effect at the level of significance ($0.05 \geq \alpha$), between (self-service bias) as a dimension of cognitive biases with different dimensions, and the quality of the auditor's professional judgment in general, where the "F" value reached (6.129), which is higher than the tabulated "F" value.

Table No. (21)

Results of simple regression analysis to test the self-serving bias dimension.

The field	Correlation coefficient R	Adjusted coefficient of determination R2	Regression coefficient	T-test value	Significance level Sig	Beta value
Self-Serving Bias	0.696	0.484	2.401	2.479	0.000	0.228

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the multiple regression analysis:

1-The results of simple regression analysis show the presence of a statistically significant effect at the level of significance (0.05≥ α) (self-serving bias) as a dimension of cognitive biases and the quality of the auditor's professional judgment, where the value of the "T" test calculated for it was (2.479) higher than the value of "T tabular at degrees of freedom (117)

2-The simple regression results also show that the dimension (self-service bias) explains, R2 = (0.448), the variance in activating the quality of the auditor's professional judgment, and the Beta value indicates that there is no negative relationship between self-service bias (as a dimension of cognitive biases with different dimensions and quality The auditor's professional judgment is a positive (direct) relationship. The strength of this relationship is (0.228) and the probability value (Sig.) is equal to (0.000). This indicates that there is no negative relationship between (self-serving bias) as a dimension of cognitive biases and the quality of professional judgment. For the auditor

3- Thus, the first null hypothesis of the first main hypothesis is rejected, which states: "There is no negative relationship between self-serving bias (as a dimension of various cognitive biases and the quality of the auditor's professional judgment), and the alternative hypothesis is accepted, i.e., there is a negative relationship between self-serving bias (as a dimension of

cognitive biases). Depending on the differences and the quality of the auditor's professional judgment

Thus, the researcher was able to achieve the part related to self-serving bias.

The second sub-hypothesis:

There is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment.

To confirm the validity of this hypothesis, the researcher analyzed the relationship between (cognitive dissonance bias and the quality of auditors' professional judgment. Through one-way ANOVA), "simple linear regression analysis" which aims to measure and test the extent of the influence of one independent variable on a variable. Continued, in addition to its own significance tests (t, f) and based on the Spss v. 25 program, where the results shown in the following table were obtained: -

Table No. (22)

Results of the "One Way Anova" test for model validity (cognitive dissonance bias)

the field	Source of variance	Sum of squares	Degrees of freedom	Mean squares	"F" value	Significance level Sig
Cognitive dissonance	Between squares	11.486	6	11.486	8.593	0.000
	Within groups	27.419	111	0.236		
	the total	38.905	117			

The tabular "F" value at two degrees of freedom (111.6) and a significance level of 0.05 is equal to (8.593)

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data,

The researcher notes from the results of the analysis of variance: There is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment. The "F" value reached (8.593), which is higher than the tabular "F" value.

Table No. (23)

Results of simple regression analysis to test the cognitive dissonance bias dimension.

The field	Correlation coefficient R	Adjusted coefficient of determination R2	Regression coefficient	T-test value	Significance level Sig	Beta value
Self-Serving Bias	0.643	0.415	1.652	6.919	0.005	0.545

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the multiple regression analysis:

1- The results of simple regression analysis show that there is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment. The value of the "T" test calculated for it was (6.919), higher than the tabular "T" value with degrees of freedom (117).

2-The results of simple regression also show that cognitive dissonance bias explains, R2 = (0.415), the variance in activating the quality of auditors' professional judgment, and the Beta value indicates that there is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment. It is a positive (direct) relationship. The strength of this relationship

is (0.545), and the probability value (Sig.) is equal to (0.005), which is less than the probability value. This indicates that there is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment.

3- Thus, the second null hypothesis of the first main hypothesis is rejected, which states, "There is no negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment." And the alternative hypothesis is accepted, that is: there is a negative relationship between cognitive dissonance bias and the quality of auditors' professional judgment."

The third sub-hypothesis:

There is no negative relationship between jumping to conclusion bias and the quality of auditors' professional judgment.

To verify the validity of this hypothesis, the researcher analyzed the relationship between (the probability of jumping to a conclusion and the quality of the auditors' professional judgment), through One Way Anova, "simple linear regression analysis," which aims to measure and test the extent of the influence of a single independent variable. On a dependent variable, in addition to its significance tests (t, f) and based on the Spss v. 25 program, the results shown in the following table were obtained:

Table No. (24)

Results of the "One Way Anova" test for the validity of the model

The field	Source of variance	Sum of squares	Degrees of freedom	Mean squares	"F" value	Significance level Sig
Jumping to conclusion	Between squares	15.449	6	15.449	67.403	0.000
	Within groups	23.455	111	0.202		
	the total	38.904	117			

The tabular "F" value at two degrees of freedom (111.6) and a significance level of 0.05 is equal to (67.403)

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data,

The researcher notes from the results of the analysis of variance: There is no negative relationship between jumping to conclusion bias and the quality of auditors' professional judgment. Overall, the "F" value reached (67.403), which is higher than the tabular "F" value:

Table No. (25)

Results of simple regression analysis to test the bias of jumping to conclusion.

the field	Correlation coefficient R	Adjusted coefficient of determination R2	Regression coefficient	T-test value	Significance level Sig	Beta value
Jumping to conclusion	0.630	0.399	1.494	8.734	0.000	0.631

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the multiple regression analysis:

1-The results of the simple regression analysis show that there is no negative relationship between the bias of jumping to conclusions and the quality of auditors' professional judgment, as

the value of the "T" test calculated for it was (8.734) higher than the value of the tabulated "T" at degrees of freedom (117).

2- The simple regression results also show that the bias of jumping to conclusions explains, R2 = (0.399), the variance in activating the quality of professional judgment, and the value of Beta indicates that there is no negative relationship between the bias of jumping to conclusions and the quality of auditors' professional judgment, which is a positive (direct) relationship. The strength of this relationship is (0.631), and the probability value (Sig.) is equal to (0.000), which is less than the probability value. This indicates that there is no negative relationship between the bias of jumping to conclusions and the quality of auditors' professional judgment.

3- Thus, the third null hypothesis of the first main hypothesis is rejected, which states, "There is no negative relationship between jumping to conclusion bias and the quality of auditors' professional judgment," and the alternative hypothesis is accepted, i.e.: There is a negative relationship between jumping to conclusion bias and the quality of auditors' professional judgment.

Thus, the researcher was able to achieve the part related to cognitive leap bias.

The fourth sub-hypothesis:

There is no negative relationship between sunk cost fallacy bias and the quality of auditors' professional judgment.

To confirm the validity of this hypothesis, the researcher analyzed the relationship between (the sunk cost fallacy bias and the quality of auditors' professional judgment), through One Way Anova, "simple linear regression analysis," which aims to measure and test the extent of the influence of a single independent variable. On a dependent variable, in addition to its significance tests (t, f) and based on the Spss v. 25 program, the results shown in the following table were obtained: -

Table No. (26)

Results of the "One Way Anova" test for the validity of the model

The field	Source of variance	Sum of squares	Degrees of freedom	Mean squares	"F" value	Significance level Sig
Sunk cost fallacy	Between squares	2.520	6	2.520	8.035	0.005
	Within groups	36.358	111	0.314		
	the total	38.878	117			

The tabular "F" value at two degrees of freedom (111.6) and a significance level of 0.05 is equal to (8.035)

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data,

The researcher notes from the results of the analysis of variance: There is no negative relationship between the sunk cost fallacy bias and the quality of the auditors' professional judgment, as the "F" value reached (8.035), which is higher than the tabulated "F" value:

Table No. (27)
Results of a simple regression analysis to test the sunk cost fallacy dimensionality bias.

The field	Correlation coefficient R	Adjusted coefficient of determination R2	Regression coefficient	T-test value	Significance level Sig	Beta value
Jumping to conclusion	0.696	0.485	2.224	2.836	0.000	0.206

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the multiple regression analysis:

1-The results of the simple regression analysis show that there is no negative relationship between the sunk cost fallacy bias and the quality of auditors' professional judgment, as the value of the "T" test calculated for it was (2.836) higher than the value of the tabulated "T" at degrees of freedom (117).

2- The simple regression results also show that the sunk cost fallacy bias explains R2 = (0.485) of the variance in activating the quality of auditors' professional judgment, and the Beta value indicates that there is no negative relationship between the sunk cost fallacy bias and the quality of auditors' professional judgment. It is a positive (direct) relationship and amounts to the strength of this relationship is (0.206). The probability value (Sig.) is equal to (0.000), and this indicates that there is no negative relationship between the sunk cost fallacy bias and the quality of auditors' professional judgment.

3- Thus, the fourth null hypothesis of the first main hypothesis is rejected, which states: "There is no negative relationship between

sunk cost fallacy bias and the quality of auditors' professional judgment," and the alternative hypothesis is accepted, i.e.: There is a negative relationship between sunk cost fallacy bias and the quality of auditors' professional judgment.

Thus, the researcher was able to achieve the part related to the sunk cost fallacy bias

The main hypothesis:

Is there a negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment in general?

To confirm the validity of this hypothesis, the researcher analyzed the relationship between all cognitive biases and the quality of auditors' professional judgment, through one-way ANOVA and multiple linear regression analysis using the least squares method, as well as testing regression estimates (t) and testing Overall model

Table No. (28)

Results of the "One Way Anova" test for the validity of the model and the dimensions of cognitive bias in general

The field	Source of variance	Sum of squares	Degrees of freedom	Mean squares	"F" value	Significance level Sig
Dimensions of cognitive bias	Between squares	20.222	6	20.222	3.370	0.000
	Within groups	18.638	111	0.168		
	the total	38.905	117			

The tabular "F" value at two degrees of freedom (111.6) and a significance level of 0.05 is equal to (3.370)

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data,

The researcher notes from the results of the analysis of variance: There is no negative relationship between the four components of cognitive bias and the overall quality of auditors' professional judgment, as the "F" value reached (3.370), which is higher than the tabular "F" value:

Table No. (29)

Results of multiple regression analysis to test the effect of: There is a negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment in general.

The field	Correlation coefficient R	Adjusted coefficient of determination R2	Regression coefficient	T-test value	Significance level Sig	Beta value
Dimensions of cognitive bias	0.821	0.670	0.786	3.187	0.002	0.441

Source: Prepared by the researcher based on the results of the statistical analysis of the analytical study data.

The researcher notes from the results of the multiple regression analysis:

1-The results of the multiple regression analysis show that there is no negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment in general, as the "T" test value calculated for it reached (3.187), higher than the tabulated "T" value at degrees of freedom (117).

2-The regression results also show that the dimensions of cognitive bias explain R2 = (0.670) of the variance in activating the quality of professional judgment of auditors, and the value of Beta indicates that there is no negative relationship between the four components of cognitive bias and the quality of professional

judgment of auditors. It is a positive (direct) relationship and the strength of this is the relationship is (0.441), and the probability value (Sig.) is equal to (0.000). This indicates that there is no negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment.

3- Thus, the null hypothesis of the first main hypothesis is rejected, which states: "There is no negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment as a whole," and the alternative hypothesis is accepted, i.e.: There is a negative relationship between the four components of cognitive bias and the quality of auditors' professional judgment as a whole.

Conclusion:

In summary, the study developed and tested a main hypothesis regarding the relationship between cognitive biases and the quality of auditors' professional judgment. The foundational expectation was that cognitive biases would, to some extent negatively affect the quality of professional judgment of auditors. Confirming this expectation, our findings reveal a significant negative relationship between cognitive biases and the quality of professional judgments in auditors. This aligns with the research of Maradona, (2020), Henrizi et al., (2021) and Chang and Luo, (2021) which indicated that judgmental shortcuts could lead to consistent errors in audit professional judgment and decision-making process. upon breaking down cognitive biases to its

different dimensions, the researcher observed specific impacts. The first sub-hypothesis, $H1_a$, expected a negative association between self- serving bias and the quality of auditors professional. Consistent with the researcher initial expectation, the results show significant negative relationship between self-serving bias and the quality of professional judgments, supporting the findings of Frank, M. L. (2020). Similarly, the second sub-hypothesis, $H1_{b,}$ expected a negative association between cognitive dissonance and the quality of auditors professional. Consistent with our initial expectation, the results show significant negative relationship between cognitive dissonance and the quality of professional judgments.

In addition, the third sub-hypothesis, $H1_c$, expected a negative association between jumping to conclusion and the quality of auditors professional. Consistent with the researcher initial expectation, the results show significant negative relationship between jumping to conclusion and the quality of professional judgments.

The final sub- hypothesis, $H1_{d,}$ expected a negative association between sunk cost fallacy and the quality of auditors professional. Consistent with the researcher initial expectation, the results show significant negative relationship between sunk cost fallacy and the quality of professional judgments.

Based on the study's findings concerning the significant impact of cognitive biases on auditors' professional judgment, it is advised that auditors receive in-depth training on recognizing

and controlling cognitive biases, such as self-serving bias, cognitive dissonance, jumping to conclusions, and the sunk cost fallacy. In order to reduce the influence of prejudice, professional auditing organizations and standards-setters should develop specific policies and processes. Other key steps would include creating a culture that values open communication and critical thinking, putting in place regular evaluation and feedback systems, encouraging cooperation in varied teams, and making use of technology and AI-based solutions. By taking these steps, auditors will be better able to identify and mitigate biases while also enhancing the overall dependability, reliability, and legitimacy of the audit results.

Study limitations and suggestions for future research:

This study is subject to several limitations. As the research methodology involves a survey-based investigation utilizing a questionnaire, the subjective nature of questionnaire may lead to inaccuracies, as participants may not provide thoughtful or honest answers. This limitation is inherent in the methodology and falls beyond the researcher's control. Also, Factors like the auditors' workload, stress levels, or the influence of their colleagues and superiors could also impact their judgment but may not be accounted for in the study. In addition, the study might not explore or identify potential interactions between experience level and susceptibility to cognitive bias. Finally, the study focuses solely on self-serving bias, cognitive dissonance,

jumping to conclusion bias, and sunk cost fallacy, it won't capture the impact of other types of cognitive biases that could affect auditor judgment, like Anchoring bias or hindsight bias. Future research directions in this field could include (1) exploring how external pressures, compensation, and budget constraints impact the efficiency of auditors' decision-making, and (2) although our study utilizes survey-based analysis, alternative statistical methods may yield differing outcomes.

References:

- Abatecola, G., Caputo, A., & Cristofaro, M. (2018). Reviewing cognitive distortions in managerial decision making: Toward an integrative co-evolutionary framework. *The Journal of Management Development*, *37*(5), pp. 409–424. https://doi.org/10.1108/JMD-08-2017-0263
- Allen, M. S., Robson, D. A., Martin, L. J., & Laborde, S. (2020). Systematic Review and Meta-Analysis of Self-Serving Attribution Biases in the Competitive Context of Organized Sport. *Personality and Social Psychology Bulletin*, *46*(7), pp. 1027-1043. https://doi.org/10.1177/0146167219893995
- Anderson, K. L. (2014). The Effects of Hindsight Bias on Experienced and Inexperienced Auditors' Relevance Ratings of Adverse Factors Versus Mitigating Factors. *Journal of Business & Economics Research (Littleton, Colo.)*, *12*(3), pp. 199–208. https://doi.org/10.19030/jber.v12i3.8722
- Arens et.al. (2021). Auditing: The Art and Science of Assurance Engagements, Canadian Edition, 15th edition, Pearson Canada.

- Arkes, H. R., & Blumer, C. (1985). The psychology of sunk cost. *Organizational behavior and human decision processes*, *35*(1), pp.124-140. https://doi.org/10.1016/0749-5978(85)90049-4
- Bensi, L., & Giusberti, F. (2007). Trait anxiety and reasoning under uncertainty. Personality and Individual Differences, 43(4), pp. 827–838. https://doi.org/10.1016/j.paid.2007.02.007
- Bonner, S. E. (1999). Judgment and Decision-Making Research in Accounting. *Accounting Horizons*, *13*(4), pp. 385–398. https://doi.org/10.2308/acch.1999.13.4.385
- Bonner, S. E., & Sprinkle, G. B. (2002). The effects of monetary incentives on effort and task performance: theories, evidence, and a framework for research. *Accounting, Organizations and Society*, *27*(4), pp. 303–345. https://doi.org/10.1016/S0361-3682(01)00052-6
- Bradley, G. W. (1978). Self-serving biases in the attribution process: A re-examination of the fact or fiction question. *Journal of Personality and Social Psychology*, *36*(1), pp. 56–71. https://doi.org/10.1037/0022-3514.36.1.56
- Brody, R. G., DeZoort, F. T., Gupta, G., & Hood, M. B. (2022). The Effects of Cognitive Bias on Fraud Examiner Judgments and Decisions. *Journal of Forensic Accounting Research*, *7*(1), pp. 50–63. https://doi.org/10.2308/JFAR-2020-030
- Cassell, C. A., Dearden, S. M., Rosser, D. M., & Shipman, J. E. (2022). Confirmation Bias and Auditor Risk Assessments: Archival Evidence. *Auditing: a Journal of Practice and Theory*, *41*(3), pp. 67–93. https://doi.org/10.2308/AJPT-2020-035
- Ceschi, A., Costantini, A., Sartori, R., Weller, J., & Di Fabio, A. (2019). Dimensions of decision-making: An evidence-based classification of heuristics and biases. *Personality and Individual*

Differences, *146*, pp. 188–200. https://doi.org/10.1016/j.paid.2018.07.033

- Chang, C. J., & Luo, Y. (2021). Data visualization and cognitive biases in audits. *Managerial Auditing Journal*, *36*(1), pp. 1–16. https://doi.org/10.1108/MAJ-08-2017-1637
- Chou, S.F., Horng, J.-S., Sam Liu, C.-H., & Lin, J.-Y. (2020). Identifying the critical factors of customer behavior: An integration perspective of marketing strategy and components of attitudes. *Journal of Retailing and Consumer Services*, *55*, pp. 102113–. https://doi.org/10.1016/j.jretconser.2020.102113
- Cossette, P. (2014). Heuristics and cognitive biases in entrepreneurs: a review of the research. *Journal of Small Business and Entrepreneurship*, *27*(5), pp. 471–496. https://doi.org/10.1080/08276331.2015.1105732
- Cristofaro, M., & Giardino, P. L. (2020). Core self-evaluations, self-leadership, and the self-serving bias in managerial decision making: A laboratory experiment. *Administrative Sciences*, *10*(3), 64. https://doi.org/10.3390/admsci10030064
- Dijkstra, K. A., & Hong, Y.-Y. (2019). The feeling of throwing good money after bad: The role of affective reaction in the sunk-cost fallacy. *PloS One*, *14*(1), e0209900–e0209900. https://doi.org/10.1371/journal.pone.0209900
- Festinger, L., (1954). A theory of social comparison processes. Hum. Relat. 7, pp. 117–140. https://doi.org/10.1177/001872675400700202.
- Financial Reporting Council. (2022). Professional Judgement Guidance. United Kingdom.
- Frank, M. L. (2020). When do Auditors' Professional Values Constrain the Biasing Effects of Self Interest? An Experimental

Investigation. *Behavioral Research in Accounting*, *32*(2), pp. 41–55. https://doi.org/10.2308/bria-19-068

- Gao, P., & Zhang, G. (2019). Auditing Standards, Professional Judgment, and Audit Quality. *The Accounting Review*, *94*(6), pp. 201–225. https://doi.org/10.2308/accr-52389
- Garety, P. A., & Freeman, D. (2013). The past and future of delusions research: from the inexplicable to the treatable. *British Journal of Psychiatry*, *203*(5), pp. 327–333. https://doi.org/10.1192/bjp.bp.113.126953
- Geller, E. S. (2021). The Actively Caring for People Movement: A Synergistic Integration of Behaviorism, Humanism, and Positive Psychology. *Behavior and Social Issues*, *30*(1), pp. 566–586. https://doi.org/10.1007/s42822-021-00072-0
- Grenier, J. H., et al. (2020). The Effects of Accounting Standard Precision, Auditor Task Expertise, and Judgment Frameworks on Audit Firm Litigation Exposure. *Current Issues in Auditing*, vol. 14, no. 2. pp. P19–P30, https://doi.org/10.2308/CIIA-2019-511.
- Haman, D. C., & Laker, D. R. (2018). Financial Planning Self-Efficacy: A Framework for Research and Practical Application. *Journal of Financial Service Professionals*, *72*(5), pp. 87–96.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: John Wiley.
- Henrizi, P., Himmelsbach, D., Hunziker, S. (2021). Anchoring and adjustment effects on audit judgments: experimental evidence from Switzerland, Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland
- Holt, T. P., & Loraas, T. M. (2021). A Potential Unintended Consequence of Big Data: Does Information Structure Lead to Suboptimal Auditor

Judgment and Decision-Making? *Accounting Horizons*, *35*(3), pp. 161–186. https://doi.org/10.2308/HORIZONS-19-123

- Humphreys, Lloyd G. (1979). The construct of general intelligence, Intelligence, Volume 3, Issue 2, pp. 105-120, https://doi.org/10.1016/0160-2896(79)90009-6
- Huq, S. F., Garety, P. A., & Hemsley, D. R. (1988). Probabilistic judgements in deluded and non-deluded subjects. The Quarterly Journal of Experimental Psychology A: Human Experimental Psychology, 40(4-A), pp. 801–812. http://dx.doi.org/10.1080/14640748808402300.
- International Standard on Auditing 500. (2009). Audit Evidence, International Auditing and assurance standard board.
- International Standard on Auditing 200. (2009). Overall Objectives of The Independent Auditor and the Conduct of An Audit in Accordance with International Standards on Auditing. International Auditing and assurance standard board.
- Jarrar, A. (2021). The Association Between Cognitive Biases and the Quality of Strategic Decision Making: Evidence from Jordanian Banks. *Banks and Bank Systems*, vol. 16, no. 2, 20, pp. 1–11, https://doi.org/10.21511/bbs.16(2).2021.01.
- Johnstone, K. M., Chen, J., & Balzan, R. P. (2017). An investigation into the jumping-to-conclusions bias in social anxiety. *Consciousness and Cognition*, *48*, pp. 55–65. https://doi.org/10.1016/j.concog.2016.10.012
- Kadous, K., & Zhou, Y. (2019). How does intrinsic motivation improve auditor judgment in complex audit tasks? *Contemporary Accounting Research*, *36*(1), pp. 108-131. https://doi.org/10.1111/1911-3846.12431
- Kahneman, D., Lovallo, D., & Sibony, O. (2011). Before you make that big decision. In *Harvard business review*, Vol. 89, Issue 6, pp. 50–137.

- Klein, J., & McColl, G. (2019). Cognitive dissonance: how self-protective distortions can undermine clinical judgement. *Medical Education*, *53*(12), pp. 1178–1186. https://doi.org/10.1111/medu.13938
- Knechel, W. R. (2016). Audit Quality and Regulation. International Journal of Auditing, 20(3), pp. 215–223. https://doi.org/10.1111/ijau.12077
- Knechel, W. R. (2000). Behavioral Research in Auditing and Its Impact on Audit Education. Issues in Accounting Education, 15(4), pp. 695–712. https://doi.org/10.2308/iace.2000.15.4.695
- Lacombe, P., Brocard, S., Zuberbühler, K., & Dahl, C. D. (2022). Rationality and cognitive bias in captive gorillas' and orang-utans' economic decision-making. *PloS One*, *17*(12), e0278150–e0278150. https://doi.org/10.1371/journal.pone.0278150
- Lambert, T. A., Peytcheva, M. (2020). When is the averaging effect present in auditor judgments? Contemporary Accounting Research. 37. pp. 277-296
- Larwood, L., & Whittaker, W. (1977). Managerial myopia: Self-serving biases in organizational planning. *Journal of Applied Psychology*, *62*(2), pp. 194–198. https://doi.org/10.1037/0021-9010.62.2.194
- Libby, R., & Rennekamp, K. (2012). Self- serving attribution bias, overconfidence, and the issuance of management forecasts. *Journal of Accounting Research*, *50*(1), pp. 197-231. https://doi.org/10.1111/j.1475-679X.2011.00430.x
- Lincoln, T. M., Lange, J., Burau, J., Exner, C., & Moritz, S. (2010). The effect of state anxiety on paranoid ideation and jumping to conclusions. An experimental investigation. *Schizophrenia Bulletin*, *36*(6), pp. 1140-1148. https://doi.org/10.1093/schbul/sbp029

- MacLean, C. L., & Dror, I. E. (2023). Measuring base-rate bias error in workplace safety investigators. *Journal of Safety Research*, *84*, pp. 108–116. https://doi.org/10.1016/j.jsr.2022.10.012
- Mala, R., & Chand, P. (2014). Impacts of additional guidance provided on international financial reporting standards on the judgments of accountants. *The International Journal of Accounting*, *49*(2), pp. 263-288. https://doi.org/10.1016/j.adiac.2015.09.003
- Mala, R., & Chand, P. (2015). Judgment and Decision-Making Research in Auditing and Accounting: Future Research Implications of Person, Task, and Environment Perspective. *Accounting Perspectives*, *14*(1), pp. 1–50. https://doi.org/10.1111/1911-3838.12040
- Maradona, A. F. (2020). A Qualitative Exploration of Heuristics and Cognitive Biases in Auditor Judgements. *Accountability*, *9*(2), pp. 94-112. https://doi.org/10.32400/ja.30634.9.2.2020.94-112
- Mautz, R. and Sharaf, H. K. (1961). The Philosophy of Auditing', *Monograph* **6** (NY) (American Accounting Association). pp. 204–231.
- Mezulis, A. H., Abramson, L. Y., Hyde, J. S., & Hankin, B. L. (2004). Is There a Universal Positivity Bias in Attributions? A Meta-Analytic Review of Individual, Developmental, and Cultural Differences in the Self-Serving Attributional Bias. *Psychological Bulletin*, *130*(5), pp. 711–747. https://doi.org/10.1037/0033-2909.130.5.711
- McLaughlin, K., Eva, K. W., & Norman, G. R. (2014). Reexamining our bias against heuristics. *Advances in Health Sciences Education: Theory and Practice*, *19*(3), pp. 457–464. https://doi.org/10.1007/s10459-014-9518-4
- McLean, B. F., Mattiske, J. K., & Balzan, R. P. (2017). Association of the jumping to conclusions and evidence integration biases with

delusions in psychosis: a detailed meta-analysis. *Schizophrenia bulletin*, *43*(2), pp. 344-354, https://doi.org/10.1093/schbul/sbw056

- Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, *82*(2), pp. 213–225. https://doi.org/10.1037/h0076486
- Mohd Sanusi, Z., Iskandar, T. M., Monroe, G. S., & Saleh, N. M. (2018). Effects of goal orientation, self-efficacy and task complexity on the audit judgement performance of Malaysian auditors. *Accounting, Auditing & Accountability Journal*, *31*(1), pp. 75-95. https://doi.org/10.1108/AAAJ-12-2015-2362
- Nguyen, H. T. L. (2023). A conceptual framework for wisdom-based decision-making process in audit profession. 41(4). pp. 1158-1188. https://doi.org/10.1108/LHT-10-2020-0256
- Nolder, C. J., & Kadous, K. (2018). Grounding the professional skepticism construct in mindset and attitude theory: A way forward. *Accounting, Organizations and Society*, *67*, pp. 1–14. https://doi.org/10.1016/j.aos.2018.03.010
- Peecher, M. E., Solomon, I., & Trotman, K. T. (2013). An accountability framework for financial statement auditors and related research questions. *Accounting, Organizations and Society*, *38*(8), pp. 596–620. https://doi.org/10.1016/j.aos.2013.07.002
- Prusaczyk, A., Oberska, J., Żuk, P., Guzek, M., & Bogdan, M. (2023). Behaviorism and the concepts of influencing the attitudes of patients towards health behaviors. *Journal of Education, Health and Sport*, *13*(4), pp. 108–114. https://doi.org/10.12775/JEHS.2023.13.04.011
- Puspitarani, P., & Mapuasari, S. A. (2020). Does Auditor Independence, Skepticism, and Professionalism Influence Audit

Quality? *Jurnal Muara Ilmu Ekonomi dan Bisnis*, *4*(2), pp. 251-260. https://doi.org/10.24912/jmieb.v4i2.7566

- Russo, J. E., & Schoemaker, P. J. (2002). Winning decisions: How to make the right decision the first time. Piatkus Publishing Limited, London, New York. https://doi.org/10.1016/S0167-4870(03)00054-0
- Saposnik, G., Redelmeier, D., Ruff, C. C., & Tobler, P. N. (2016). Cognitive biases associated with medical decisions: a systematic review. *BMC Medical Informatics and Decision Making*, *16*(1), pp. 138–138. https://doi.org/10.1186/s12911-016-0377-1
- Schmutte, J., & Duncan, J. R. (2009). Professional judgment: a model for accounting and auditing decisions. The CPA Journal (1975), 79(9), pp. 32–35.
- Shanshan Wen, S. (2018). The Effect of Result Publicity on Self-Serving Attributional Bias:A Social Comparison Perspective. *Frontiers of Business Research in China*, *12*(1), pp. 3–14. https://doi.org/10.1186/s11782-018-0028-8
- Shu, S. (2018). *Debias Human Judgment with a Common Decision Bias: An Experimental Study of the Anchoring Effect in Hiring Decision-Making*. ProQuest Dissertations Publishing.
- Şişmanoğlu, E., & Arikboğa, D. (2018). The factors affecting using professional judgment in independent auditing: evidence from Turkey. *Contemporary Research in Economics and Social Sciences*, *2*(1), pp. 141-188. https://dergipark.org.tr/en/pub/conress/issue/38634/422745
- So, S. H., Garety, P. A., Peters, E. R., & Kapur, S. (2010). Do antipsychotics improve reasoning biases? A review. Psychosomatic Medicine, 72(7), pp. 681-693. doi: 10.1097/PSY.0b013e3181e7cca6.
- So, S. H., Siu, N. Y., Wong, H., Chan, W., & Garety, P. A. (2016). 'Jumping to conclusions' data-gathering bias in psychosis and other

psychiatric disorders — Two meta-analyses of comparisons between patients and healthy individuals. *Clinical Psychology Review*, *46*, pp. 151–167. https://doi.org/10.1016/j.cpr.2016.05.001

- Soe, A. K., Gavurova, B., Olah, J., & Hasan, M. (2022). Does Auditor's Attributes Impact on Professional Judgement In A Financial Audit? Empirical Evidence from Myanmar Sai. Verslas: Teorija Ir Praktika, 23(1), pp. 218–230. https://doi.org/10.3846/btp.2022.12976
- Strough, J., Schlosnagle, L., Karns, T., Lemaster, P., & Pichayayothin, N. (2014). No Time to Waste: Restricting Life-Span Temporal Horizons Decreases the Sunk-Cost Fallacy. *Journal of Behavioral Decision Making*, *27*(1), pp. 78–94. https://doi.org/10.1002/bdm.1781
- Svanstrom, T. (2016). Time Pressure, Training Activities and Dysfunctional Auditor Behaviour: Evidence from Small Audit Firms. *International Journal of Auditing*, *20*(1), pp. 42–51. https://doi.org/10.1111/ijau.12054
- The Institute of Chartered Accountants of Scotland. (2016). A Professional Judgement Framework for Financial Reporting Decision Making. Technical Policy Board of ICAS.
- Tucker, B. P., & Alewine, H. (2021). The sunk cost fallacy and throwing the baby out with the bathwater: a little like rocket science. *Accounting, Auditing & Accountability Journal*, *34*(4), pp. 1016–1017. https://doi.org/10.1108/AAAJ-05-2021-121
- Tversky, A., and D. Kahneman. (1974). Judgment under uncertainty: Heuristics and biases. Science 185 (4157): pp. 1124– 1131. https://doi.org/10.1126/science.185.4157.1124
- Wedemeyer, P. D. (2010). A Discussion of Auditor Judgment as the Critical Component in Audit Quality - A Practitioner's Perspective." *International Journal of Disclosure and Governance*, vol. 7, no. 4. pp. 320–33, https://doi.org/10.1057/jdg.2010.19.

- Whelehan, D.F., Conlon, K.C. & Ridgway, P.F. (2020). Medicine and heuristics: cognitive biases and medical decision-making. *Ir J Med Sci* **189**, pp. 1477–1484. https://doi.org/10.1007/s11845-020-02235-1
- Wright, A. M., & Wu, Y.-J. (2018). The Impact of Auditor Task Difficulty and Audit Quality Indicators on Jurors' Assessments of Audit Quality. *Behavioral Research in Accounting*, *30*(2), pp. 109–125. https://doi.org/10.2308/BRIA-52081
- Zeelenberg, M., & Van Dijk, E. (1997). A reverse sunk cost effect in risky decision making: Sometimes we have too much invested to gamble. *Journal of Economic Psychology*, *18*(6), pp. 677-691. https://doi.org/10.1016/S0167-4870(97)00029-9.