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**Team Deliberation and Audit Quality: The Mediating Role of Audit
Brainstorming in the Competence–Judgment–Skepticism–
Performance Nexus**



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Team Deliberation and Audit Quality: The Mediating Role of Audit Brainstorming in the Competence–Judgment–Skepticism–Performance Nexus



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Abstract

Purpose: This study examines whether audit brainstorming mediates the relationships between auditor competence, professional judgment, professional skepticism, and auditor performance. Drawing on human capital theory and team information-processing perspectives, the study argues that individual auditor attributes influence engagement outcomes through structured collaborative mechanisms embedded in fraud brainstorming sessions.

Methodology: Using survey data from 285 audit managers across licensed audit firms in Ghana, the study tests a mediation model using partial least squares structural equation modeling (PLS-SEM). Auditor performance is operationalized through audit evidence quality and audit reporting quality, aligning closely with the auditor's core objective under international auditing standards.

Findings: The results indicate that audit brainstorming fully mediates the relationship between competence and auditor performance, and partially mediates the relationships between professional judgment, professional skepticism, and performance. These findings suggest that technical expertise enhances performance primarily when integrated into team-based deliberations, while judgment and skepticism exert both direct and process-mediated effects.

Unique Contribution to Theory, Policy and Practice: The study contributes to the audit literature by introducing brainstorming as a process-level mechanism linking auditor attributes to performance and by providing evidence from a developing economy. The results have implications for audit firms and regulators seeking to strengthen fraud risk assessment and engagement quality.

Keywords: *Audit Brainstorming, Auditor Performance, Professional Judgment, Professional Skepticism, Audit Evidence Quality, Audit Reporting Quality*

JEL Codes: *M41, M42, J24*

1. Introduction

Understanding the determinants of audit quality remains a central concern in accounting research and regulation. Despite extensive inquiry into auditor characteristics, firm attributes, and institutional settings, persistent inspection findings by regulators such as the Public Company Accounting Oversight Board (PCAOB) continue to highlight deficiencies in risk assessment and the exercise of professional skepticism. These concerns underscore a fundamental question: through what mechanisms do individual auditor attributes translate into high-quality audit outcomes?

Prior research emphasizes the importance of auditor competence, professional judgment, and professional skepticism in shaping audit performance (e.g., Christensen, Glover, Omer, & Shelley, 2016; Hardies & Janssen, 2017). However, much of this literature examines these attributes in isolation or links them directly to output-based proxies of audit quality such as discretionary accruals, restatements, or going-concern opinions (DeFond & Zhang, 2014; Francis, 2011). Less attention has been devoted to the *process mechanisms* through which these auditor characteristics affect performance—particularly collaborative processes mandated by auditing standards.

One such process is audit team brainstorming. Since the issuance of Statement on Auditing Standards No. 99 and subsequent guidance under PCAOB Auditing Standard No. 2110, audit engagement teams are required to conduct fraud brainstorming sessions during the planning phase. These sessions are intended to facilitate the identification of fraud risks, enhance team-based professional skepticism, and improve the quality of audit evidence gathering. Experimental and field studies suggest that brainstorming can improve fraud risk identification and audit responses (Dennis & Johnstone, 2016; Gissel & Johnstone, 2017; Chen, Trotman, & Zhou, 2018). Yet evidence remains mixed regarding how brainstorming interacts with auditor attributes and whether it serves merely as a procedural requirement or as a substantive performance-enhancing mechanism.

This study addresses this gap by examining whether audit brainstorming mediates the relationships between auditor competence, professional judgment, professional skepticism, and auditor performance. Conceptually, the study argues that competence and judgment are not self-executing inputs; rather, their impact on audit outcomes depends on structured knowledge sharing, critical discussion, and collective risk assessment within the engagement team. Brainstorming provides the institutionalized forum through which individual capabilities are aggregated, challenged, and refined into audit strategies and evidence-gathering decisions.

The study contributes to the audit literature in four principal ways. First, the study shifts attention from commonly used archival proxies of audit quality to more proximal performance outcomes—specifically, audit evidence quality and audit reporting quality. While prior studies often rely on financial reporting outcomes as indirect measures of audit quality (DeFond &

Zhang, 2014; Turel et al., 2017), it focuses on outputs that are directly aligned with the auditor's core objective under International Auditing and Assurance Standards Board standards: obtaining sufficient appropriate audit evidence and expressing an appropriate opinion.

Second, it introduces audit brainstorming as a mediating construct linking individual auditor attributes to performance. Existing research largely examines brainstorming as a standalone intervention (Dennis & Johnstone, 2016; Gissel & Johnstone, 2017) or studies team composition effects (Contessotto, Knechel, & Moroney, 2019). By modeling brainstorming as a process mechanism, it provides a theoretically grounded explanation of *how* competence, professional judgment, and skepticism translate into improved audit outcomes.

Third, the study extends the geographic scope of audit process research to a developing economy. Most empirical evidence on audit team dynamics is drawn from developed markets such as the United States and Australia. The study provides evidence from Ghana, a setting characterized by evolving regulatory oversight and heterogeneous audit firm structures. Studying this context allows us to examine whether process-based mechanisms such as brainstorming are particularly salient where institutional enforcement may differ from that in developed markets.

Fourth, methodologically, the study employs a cross-sectional survey design targeting audit managers and analyze the data using structural equation modeling. While experimental methods have provided important causal insights into brainstorming (e.g., McAllister, Blay, & Kadous, 2016), survey-based evidence offers complementary insights into how brainstorming operates in naturalistic engagement settings.

Using data from 285 audit managers across licensed audit firms in Ghana, The study finds that audit brainstorming fully mediates the relationship between competence and auditor performance and partially mediates the relationships between professional judgment, professional skepticism, and performance. These findings suggest that competence enhances performance primarily when channeled through structured team-based interactions, whereas judgment and skepticism have both direct and process-mediated effects.

Our results have implications for regulators and firms. If brainstorming serves as the conduit through which individual capabilities are transformed into audit quality, then compliance-oriented approaches to brainstorming may be insufficient. Instead, audit firms should emphasize structured participation, diverse expertise, and effortful engagement during fraud discussions. In doing so, they may better operationalize the intent of standards such as PCAOB AS 2110 and improve substantive audit outcomes.

The remainder of the paper proceeds as follows. Section 2 develops the theoretical framework and hypotheses. Section 3 describes the research design and measurement of key constructs. Section 4 presents the empirical results. Section 5 discusses implications for theory, practice, and future research, and Section 6 concludes.

2. Theoretical Framework and Hypothesis Development

2.1 Conceptual Foundations

Auditing is a judgment-intensive, knowledge-based professional service in which individual expertise must be translated into collective action. Contemporary audit engagements are performed by teams operating under hierarchical structures, standardized methodologies, and regulatory oversight. Accordingly, understanding audit performance requires attention not only to individual auditor traits but also to the team-based processes through which those traits are deployed.

Two complementary theoretical perspectives guide this framework. First, human capital theory (Becker, 1964) posits that individual knowledge, training, and experience enhance productivity and performance. In auditing, competence, professional judgment, and professional skepticism represent critical forms of human capital. Prior research links auditor expertise and industry specialization to higher audit quality (Bonner, 1999; DeFond & Zhang, 2014). However, human capital theory alone does not explain how individual capabilities are transformed into collective audit outcomes within engagement teams.

Second, information processing and team cognition theories (e.g., Hinsz, Tindale, & Vollrath, 1997) suggest that group discussion structures how information is shared, evaluated, and integrated. In complex tasks such as fraud risk assessment, collective deliberation may enhance detection of anomalies by pooling diverse perspectives and mitigating individual cognitive biases. Brainstorming, particularly when structured and effortful, can facilitate deeper information processing and enhance decision quality.

Audit brainstorming, mandated under standards such as Statement on Auditing Standards No. 99 and PCAOB Auditing Standard No. 2110, institutionalizes this team-based information processing. These standards require engagement teams to discuss susceptibility to fraud, potential risk factors, and appropriate audit responses. Thus, brainstorming provides a structured forum for integrating individual competence, judgment, and skepticism into collective audit strategies. The study conceptualizes brainstorming as a mediating mechanism that channels auditor attributes into enhanced audit evidence quality and audit reporting quality.

2.2 Auditor Competence and Audit Brainstorming

Auditor competence encompasses technical knowledge, professional training, industry expertise, and experience. Research demonstrates that expertise improves fraud detection, risk assessment, and audit judgments (Bonner, 1999; Christensen et al., 2016). Competent auditors possess richer knowledge structures that allow them to recognize patterns and anomalies more effectively.

However, competence may not automatically translate into superior engagement outcomes. In team-based audits, knowledge must be articulated, shared, and challenged. Brainstorming sessions provide the platform through which diverse expertise is combined. Studies show that

team diversity and specialist involvement enhance fraud risk discussions (Contessotto et al., 2019; Janssen, 2020). Mohd-Nassir et al. (2016) find that diverse expertise positively affects brainstorming quality, suggesting that competence enhances outcomes through interactive processes.

From a theoretical standpoint, brainstorming allows competent auditors to externalize tacit knowledge, expose assumptions to scrutiny, and refine audit plans collaboratively. Without such interaction, expertise may remain siloed, limiting its impact on audit evidence collection and reporting decisions. The study therefore expects competence to be positively associated with the quality of audit brainstorming discussions. Further, if brainstorming serves as the mechanism through which competence influences engagement outcomes, the study expects mediation.

H1: Auditor competence is positively associated with the effectiveness of audit brainstorming.

H2: Audit brainstorming mediates the relationship between auditor competence and auditor performance.

2.3 Professional Judgment and Audit Brainstorming

Professional judgment refers to the application of relevant training, knowledge, and experience within the context provided by auditing standards to make informed decisions. Auditing standards emphasize the centrality of professional judgment in risk assessment, audit planning, and evaluation of evidence (IAASB, 2018).

Prior literature indicates that high-quality brainstorming is associated with improved fraud risk identification and audit responses (Dennis & Johnstone, 2016; Gissel & Johnstone, 2017). Fraud brainstorming, in particular, requires auditors to deliberate about incentives, opportunities, and rationalizations consistent with the fraud triangle framework. Such deliberation inherently involves professional judgment.

Judgment, however, is susceptible to cognitive biases and heuristics (Pennycook & Thompson, 2016). Group discussion can mitigate these biases by encouraging alternative viewpoints and critical evaluation. Structured brainstorming guidelines have been shown to improve both the quantity and quality of fraud-related ideas (Chen et al., 2018). Thus, brainstorming may strengthen the impact of professional judgment by providing a setting in which judgments are debated, refined, and validated. Since professional judgment directly influences audit decisions, the study also expects a direct association with performance. However, brainstorming may amplify or channel this effect.

H3: Professional judgment is positively associated with the effectiveness of audit brainstorming.

H4: Audit brainstorming partially mediates the relationship between professional judgment and auditor performance.

2.4 Professional Skepticism and Audit Brainstorming

Professional skepticism is defined as a questioning mind and a critical assessment of audit evidence. Regulators consistently cite insufficient skepticism as a primary driver of audit deficiencies (Hardies & Janssen, 2017). Skeptical auditors are more likely to seek corroborating evidence, challenge management representations, and identify inconsistencies.

Experimental evidence suggests that skepticism traits enhance fraud brainstorming outcomes. McAllister et al. (2016) show that individuals with higher skepticism generate more fraud-related ideas during brainstorming sessions. Brainstorming may also serve as a mechanism for reinforcing skepticism at the team level by legitimizing questioning and dissent.

From an information processing perspective, brainstorming encourages elaboration and critical evaluation, which are central to skeptical inquiry. In the absence of open discussion, hierarchical pressures or time constraints may suppress skeptical behavior. Inasmuch as skepticism directly affects evidence evaluation, the study anticipates both direct and mediated effects on performance. Accordingly, the study posits:

H5: Professional skepticism is positively associated with the effectiveness of audit brainstorming.

H6: Audit brainstorming partially mediates the relationship between professional skepticism and auditor performance.

2.5 Audit Brainstorming and Auditor Performance

Audit performance in this study is operationalized through two core outputs aligned with the auditor's objective under standards issued by the International Auditing and Assurance Standards Board. Audit evidence quality is the sufficiency and appropriateness of evidence gathered. Audit reporting quality is the appropriateness and reliability of the audit opinion issued.

Brainstorming enhances fraud risk identification, risk response planning, and information sharing (Dennis & Johnstone, 2016; Chen et al., 2018). By encouraging comprehensive consideration of potential misstatements, brainstorming may lead to more targeted audit procedures and higher-quality evidence.

Moreover, improved risk assessment and evidence evaluation should culminate in more accurate and defensible audit opinions. Thus, brainstorming operates not merely as a compliance exercise but as a substantive contributor to engagement quality. The study therefore hypothesizes:

H7: Audit brainstorming is positively associated with auditor performance.

2.6 Integrated Mediation Model

Figure 1 presents the conceptual model of competence, professional judgment, and professional skepticism are modeled as antecedents of audit brainstorming and auditor performance.

Brainstorming functions as a mediating construct that translates individual auditor attributes into improved engagement outcomes.

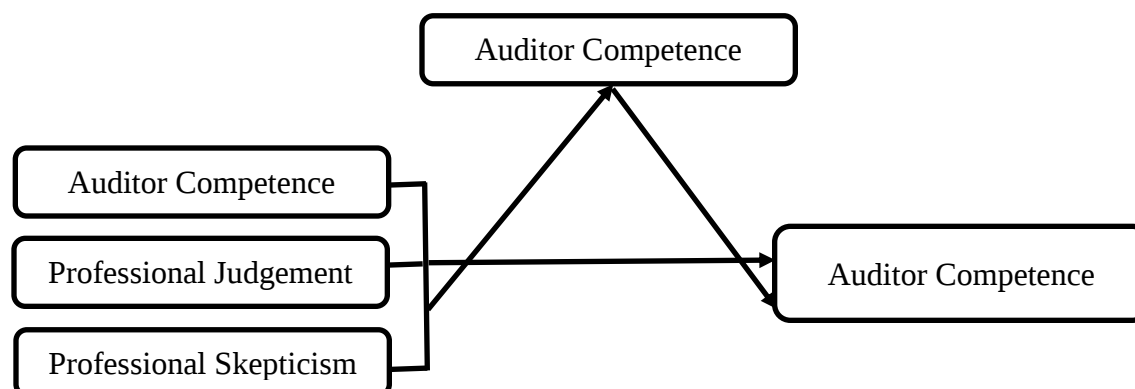


Figure 1: Conceptual Framework of the Mediating Role of Audit Brainstorming in the Competence–Judgment–Skepticism–Performance Nexus

In sum, the framework advances the audit literature by integrating human capital and team information-processing perspectives to explain how individual auditor attributes are transformed into audit quality through structured collaborative processes.

3. Research Methodology

3.1 Research Design, Sample & Instrumentation

This study is conducted in Ghana, an emerging economy with an evolving audit regulatory environment and heterogeneous audit firm structures. Ghana provides an appropriate setting to examine audit team processes because audit firms vary significantly in size, resources, and engagement complexity, yet operate under common professional standards.

The sampling frame consists of licensed audit firms registered with the Institute of Chartered Accountants Ghana (ICAG). At the time of data collection, 342 audit firms (excluding branches) were registered. These firms were categorized (A1, A, B1, B, C, and D) based on revenue levels, number of partners, and staffing structure.

The target respondents were audit managers. Audit managers are particularly suitable informants because they (i) actively participate in fraud brainstorming sessions, (ii) coordinate audit teams, and (iii) are directly involved in evaluating audit evidence and drafting reports. Although the total number of audit managers was not publicly available, ICAG reported 677 audit partners across firms. Because larger firms typically employ more managers, the number of partners was used as a benchmark to proportionally stratify the sample.

Using Cochran's sampling formula for large populations, the study determined a minimum sample size of 278 audit managers. Questionnaires were distributed to 310 managers across firm

categories, and 285 usable responses were received, yielding a response rate of approximately 92 percent of distributed questionnaires and exceeding the required minimum.

The study employs a quantitative, cross-sectional survey design to test the hypothesized mediation relationships. A survey approach is appropriate because the constructs of interest—brainstorming effectiveness, professional judgment, skepticism, and perceived audit performance—are not directly observable in archival data and require self-reported assessments from practitioners.

The structured questionnaire consisted of five sections covering Auditor competence, Professional judgment, Professional skepticism, Audit brainstorming effectiveness, and Auditor performance (audit evidence quality and audit reporting quality). Responses were measured using five-point Likert-type scales. Items measuring professional skepticism ranged from “never” (1) to “always” (5), while other constructs ranged from “strongly disagree” (1) to “strongly agree” (5).

To ensure content validity, the instrument was reviewed by seven subject-matter experts in auditing and accounting research, as well as three practitioners for clarity and readability. Revisions were made based on their feedback. A pilot study was subsequently conducted to assess reliability and refine measurement items.

Ethical clearance was obtained from the relevant institutional review board. Participation was voluntary, and confidentiality and anonymity were assured. No identifying information about respondents or their firms was collected.

3.2 Measurement of Variables

Consistent with the objective of auditing articulated by the International Auditing and Assurance Standards Board, auditor performance is operationalized using two output-based dimensions. Audit Evidence Quality: The extent to which auditors obtain sufficient and appropriate evidence to support conclusions. Audit Reporting Quality: The appropriateness, accuracy, and reliability of the audit opinion issued.

This approach aligns more closely with the core objectives of auditing than commonly used archival proxies such as discretionary accruals or restatements (DeFond & Zhang, 2014). By focusing on evidence and reporting quality, the study captures performance outcomes directly linked to engagement execution. Items were adapted from prior audit quality literature and refined for contextual relevance.

Audit brainstorming is conceptualized as the effectiveness of team-based discussions concerning fraud risk identification, risk assessment, and audit responses. The construct captures participation and diversity of team members (attendance), structure and organization of discussions, and engagement effort during brainstorming sessions.

Measurement items were informed by prior experimental and field research on fraud brainstorming (Dennis & Johnstone, 2016; Gissel & Johnstone, 2017; Chen et al., 2018). Respondents evaluated the extent to which brainstorming sessions in their engagements were structured, inclusive, effortful, and conducive to identifying material misstatement risks.

Auditor competence reflects technical expertise, training, industry knowledge, and experience relevant to audit engagements. Measurement items capture perceptions of adequacy of professional training, knowledge of auditing standards, industry-specific expertise, and experience in complex engagements. This operationalization is consistent with human capital perspectives on audit quality (Bonner, 1999; Christensen et al., 2016).

Professional judgment refers to the auditor's ability to apply knowledge and experience in making informed decisions under uncertainty. Items assess careful evaluation of audit evidence, deliberative decision-making processes, and consideration of alternative explanations. The construct reflects the emphasis placed on judgment in auditing standards and prior literature (Dennis & Johnstone, 2016).

Professional skepticism captures a questioning mindset and critical evaluation of audit evidence. Measurement items reflect tendency to challenge management assertions, propensity to seek corroborating evidence, and alertness to potential fraud indicators. The operationalization aligns with prior research linking skepticism to fraud detection and audit quality (Hardies & Janssen, 2017; McAllister et al., 2016).

3.3 Reliability and Validity Assessment

The study assessed internal consistency reliability using Cronbach's alpha and composite reliability (CR). All constructs exceeded the recommended threshold of 0.70, indicating satisfactory reliability.

Convergent validity was evaluated using average variance extracted (AVE), with values exceeding the 0.50 benchmark. Discriminant validity was assessed using the Fornell–Larcker criterion and cross-loading analysis, confirming that constructs were empirically distinct.

3.4 Analytical Approach

The study employed structural equation modeling (SEM) using partial least squares (PLS-SEM) to test the measurement and structural models. PLS-SEM is appropriate given the study's predictive focus, mediation framework, and latent constructs.

The analysis proceeded in two stages: measurement model evaluation in assessing reliability and validity of constructs. Structural model evaluation is used in testing direct and indirect relationships among competence, professional judgment, professional skepticism, audit brainstorming, and auditor performance.

Mediation effects were examined using bootstrapping procedures to estimate indirect effects and their statistical significance. The study assessed whether mediation was full or partial based on the significance of both direct and indirect paths.

This analytical framework allows us to rigorously evaluate whether audit brainstorming functions as a mechanism translating auditor attributes into improved audit evidence and reporting quality.

4. Results and Discussion

4.1 Descriptive Statistics and Correlations

Table 1 presents descriptive statistics and Pearson correlations among the principal variables: auditor competence, professional judgment, professional skepticism, audit brainstorming, and auditor performance.

Table 1: Descriptive Statistics and Correlation Results

Variable	Mean	Std. Dev.	1	2	3	4	5
Auditor Competence	3.861	.625	1				
Professional Judgement	3.695	.363	.651	1			
Professional Skepticism	3.892	.437	.663	.732	1		
Audit Brainstorming	3.594	.693	.691	.594	.570	1	
Auditor Performance	4.136	.443	.567	.733	.752	.799	1

The descriptive results indicate that respondents generally report relatively high levels of competence, professional judgment, skepticism, and engagement in brainstorming activities. This is consistent with the professional qualifications and experience expected of audit managers.

The correlation results in Table 1 reveal positive and statistically significant associations among all major constructs. In particular, audit brainstorming is positively correlated with competence, professional judgment, professional skepticism, and auditor performance. While these correlations provide preliminary support for the hypothesized relationships, multivariate structural modeling is required to assess mediation effects and isolate indirect pathways.

Before testing the structural relationships, the study assessed the adequacy of the measurement model. Cronbach's alpha and composite reliability (CR) values for all constructs exceed the recommended threshold of 0.70, indicating satisfactory internal consistency. Average variance extracted (AVE) values exceed 0.50 for all constructs, demonstrating that each latent variable explains more than half of the variance in its indicators. Using the Fornell–Larcker criterion and

cross-loading analysis, the study confirms that each construct shares greater variance with its own measures than with other constructs. This supports discriminant validity and suggests that competence, professional judgment, professional skepticism, brainstorming, and performance represent empirically distinct concepts. Overall, the measurement model exhibits adequate psychometric properties, permitting interpretation of the structural model results.

The study next estimated the structural model using bootstrapping procedures to test the direct and indirect effects. Direct Effects: consistent with expectations: audit brainstorming is positively and significantly associated with auditor performance, supporting H7. Also, professional judgment and professional skepticism exhibit significant direct relationships with auditor performance. The direct effect of competence on auditor performance becomes insignificant once brainstorming is included in the model. These findings suggest that while judgment and skepticism exert independent effects on performance, competence may operate primarily through collaborative mechanisms.

The study tested mediation using bootstrapped indirect effects. The results are summarized conceptually below.

(a) Competence → Audit Brainstorming → Auditor Performance

Table 2: Mediating Effect of Audit Brainstorming

Path Name	Total Effect			Direct Effect			Indirect Effect		
	Coefficient	T	p-value	Coefficient	T	p-value	Coefficient	t	p-value
Comp.->AB->AP	0.317	3.803	.000				0.317	3.803	.000
PJ->AB->AP	0.780	3.646	.000	0.585	3.455	.000	0.195	3.289	.001
PS->AB->AP	0.695	2.751	.000	0.535	3.384	.000	0.160	2.347	.001

Legend: Comp = Competence, AB = Audit Brainstorming, AP = Auditor Performance, PJ = Professional Judgment, PS = Professional Skepticism

Table 2 presents the indirect path from competence to performance through brainstorming is positive and statistically significant ($\beta = 0.317$, $t = 3.803$, $p < 0.000$). However, the direct path from competence to performance is not significant when brainstorming is included.

This pattern indicates *full mediation*. Competence enhances auditor performance only insofar as it contributes to effective brainstorming discussions. In practical terms, individual expertise translates into improved audit evidence and reporting quality primarily through team-based interaction. Thus, H1 and H2 are supported.

(b) Professional Judgment → Brainstorming → Auditor Performance

The indirect effect of professional judgment on auditor performance through brainstorming is positive and significant ($\beta = 0.195$, $t = 3.289$, $p = 0.001$). The direct effect of professional judgment on performance remains significant ($\beta = 0.585$, $t = 3.455$, $p < 0.001$). This indicates partial mediation. Professional judgment improves performance both directly—through individual decision-making—and indirectly—by enhancing the quality of brainstorming sessions. H3 and H4 are therefore supported.

(c) Professional Skepticism → Brainstorming → Auditor Performance

Similarly, the indirect effect of professional skepticism on auditor performance via brainstorming is significant ($\beta = 0.160$, $t = 2.347$, $p = 0.001$), while the direct effect remains significant ($\beta = 0.535$, $t = 3.384$, $p < 0.001$). This pattern reflects partial mediation. Skeptical auditors both directly influence evidence evaluation and strengthen team-level fraud discussions. H5 and H6 are supported.

4.4 Discussion of Findings

The results provide strong evidence that audit brainstorming functions as a key process mechanism linking auditor attributes to engagement outcomes. First, the full mediation observed for competence suggests that technical expertise alone is insufficient to improve audit performance unless it is effectively shared and integrated within the engagement team. This finding is consistent with team cognition theory and extends prior evidence on the importance of diverse expertise in fraud discussions (Contessotto et al., 2019).

Second, the partial mediation results for professional judgment and skepticism indicate that these attributes influence performance both individually and collectively. Judgment and skepticism affect how auditors evaluate evidence directly, but their impact is amplified when embedded in structured team deliberations.

Third, the positive and significant association between brainstorming and performance underscores that brainstorming is not merely a procedural compliance requirement under standards such as PCAOB Auditing Standard No. 2110. Rather, it represents a substantive contributor to audit evidence quality and reporting reliability.

The structural model demonstrates satisfactory explanatory power, with meaningful R^2 values for audit brainstorming and auditor performance. Bootstrapped confidence intervals confirm the stability of indirect effects. Additional analyses indicate that the mediation results remain robust

when controlling for firm category and respondent experience, suggesting that the findings are not driven solely by firm size or tenure effects.

In sum, audit brainstorming significantly enhances auditor performance, competence influences performance only through brainstorming (full mediation), and professional judgment and professional skepticism influence performance both directly and indirectly through brainstorming (partial mediation). These findings support the theoretical argument that structured team-based information processing mechanisms are central to transforming auditor human capital into high-quality audit outcomes.

5. Implications and Conclusion

This study examines whether audit brainstorming serves as a mediating mechanism through which auditor competence, professional judgment, and professional skepticism influence auditor performance. The findings offer several theoretical and practical insights.

5.1 Theoretical Implications

5.1.1 Brainstorming as a Process Mechanism in Audit Quality

A central contribution of this study is conceptualizing audit brainstorming as a *process-level mechanism* that links individual auditor attributes to engagement outcomes. Prior research has largely examined auditor characteristics (e.g., expertise, industry specialization) or archival audit quality outcomes (e.g., discretionary accruals, restatements) (DeFond & Zhang, 2014; Francis, 2011). Our results suggest that these links may be incomplete without considering the collaborative processes through which individual human capital is deployed.

The full mediation effect observed for competence indicates that expertise enhances performance only when integrated into structured team discussions. This finding advances human capital theory by demonstrating that knowledge must be activated through interaction. In complex audit environments, tacit knowledge becomes consequential when shared, debated, and translated into concrete audit procedures during brainstorming sessions.

5.1.2 Judgment and Skepticism as Dual-Path Constructs

The partial mediation results for professional judgment and professional skepticism reveal dual pathways. These attributes influence performance directly—through individual evidence evaluation—and indirectly—through collective fraud discussions.

This finding complements experimental evidence showing that skeptical individuals generate more fraud-related ideas in group settings (McAllister et al., 2016). It also aligns with regulatory concerns raised by the Public Company Accounting Oversight Board regarding insufficient skepticism in risk assessment. Our results suggest that skepticism is strengthened when engagement teams create structured forums that legitimize questioning and critical analysis. Thus,

professional judgment and skepticism are not merely personal traits; they are amplified—or constrained—by team processes.

5.1.3 Moving Beyond Archival Proxies of Audit Quality

By operationalizing auditor performance using audit evidence quality and audit reporting quality, this study responds to calls for more proximal measures of audit outcomes (DeFond & Zhang, 2014). Rather than relying exclusively on downstream financial reporting outcomes, the study examines outputs directly tied to the auditor's objective under standards issued by the International Auditing and Assurance Standards Board. This approach contributes to a more process-oriented understanding of audit quality and may help reconcile inconsistencies in archival findings.

5.2 Practical Implications

The findings have direct implications for audit firms, regulators, and professional bodies. First, the full mediation effect for competence suggests that hiring technically strong auditors is insufficient if firms do not cultivate effective collaborative environments. Audit firms should encourage inclusive participation during brainstorming sessions, ensure that senior members facilitate open discussion rather than dominate it, and promote structured, effortful deliberation rather than checklist-based compliance. Second, given the partial mediation of judgment and skepticism, firms should design brainstorming sessions that actively stimulate critical thinking. This may involve assigning devil's advocate roles, encouraging alternative hypothesis generation, or requiring explicit documentation of fraud risk reasoning. Standards such as PCAOB Auditing Standard No. 2110 mandate fraud brainstorming, but enforcement often focuses on documentation rather than substance. Our results indicate that the *quality* of brainstorming—attendance, structure, and engagement effort—matters for performance outcomes. Regulators may therefore consider inspection approaches that assess not only whether brainstorming occurred, but how it was conducted and whether it meaningfully informed risk assessment procedures.

The study's Ghanaian context provides insights for emerging markets where audit oversight systems are evolving. Structured team processes such as brainstorming may play a particularly important role in strengthening audit quality where institutional enforcement mechanisms are less mature. Professional bodies such as the Institute of Chartered Accountants Ghana may incorporate enhanced training modules on effective fraud brainstorming techniques to strengthen engagement-level audit quality.

5.3 Limitations and Directions for Future Research

Despite its contributions, the study has limitations. First, the cross-sectional survey design limits causal inference. Although mediation is theoretically grounded and tested using bootstrapping procedures, future research may employ experimental or longitudinal designs to strengthen

causal claims. Second, auditor performance is measured using perceptual self-reports. While this approach captures engagement-level processes not observable in archival data, future studies could triangulate survey responses with inspection outcomes or engagement documentation. Third, the study focuses on audit managers in one national context. Replication in other institutional settings would enhance generalizability and allow examination of whether mediation effects vary across regulatory regimes. Future research may also explore additional process mechanisms—such as leadership style, psychological safety, or digital collaboration tools—that may interact with brainstorming effectiveness.

5.4 Conclusion

This study investigates whether audit brainstorming mediates the relationships between auditor competence, professional judgment, professional skepticism, and auditor performance. Using survey data from audit managers in Ghana and structural equation modeling, it documents three principal findings. First, audit brainstorming fully mediates the relationship between competence and auditor performance. Technical expertise enhances performance only when effectively integrated into team discussions. Second, professional judgment and professional skepticism exhibit both direct and indirect effects on performance, indicating partial mediation through brainstorming. Third, effective brainstorming significantly improves audit evidence quality and audit reporting quality, suggesting that it functions as a substantive contributor to audit outcomes rather than merely a procedural requirement.

Ultimately, the findings underscore the importance of team-based information processing mechanisms in auditing. Audit quality is not solely a function of individual expertise or regulatory mandates; it also depends on how engagement teams deliberate, challenge assumptions, and translate knowledge into action.

By integrating human capital and team cognition perspectives, this study advances understanding of the mechanisms through which auditor attributes shape engagement outcomes and provides a foundation for future research on collaborative processes in auditing.

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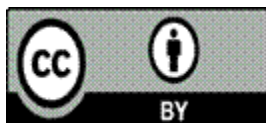
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