

From Information Asymmetry to Agency Costs: Preliminary Evidence on Internal Audit, Board Independence and Managerial Accountability in Nigerian Financial Institutions

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Abstract: This study provides a preliminary empirical extension of Agency Theory by examining how information asymmetry, principal-agent conflict, agency costs, internal audit effectiveness, managerial accountability and board independence relate within a financial-sector governance context. Building on Ajaegbu and Mmayie's (2025) conceptualization of internal audit as an agency-governance mechanism, the study distinguishes between the formation of agency problems and the governance mechanisms intended to constrain them. A cross-sectional survey generated 33 complete responses from professionals with experience relevant to internal audit, governance, control, finance, risk and management; 23 respondents reported currently working in Nigerian financial institutions. Multi-item constructs were assessed for internal consistency, while exploratory hypotheses were examined using correlation analysis, ordinary least-squares regression, non-parametric bootstrapping and moderation analysis. The results identify a strong agency-problem pathway. Information asymmetry was strongly positively associated with principal-agent conflict ($\beta = .818, p < .001$), while principal-agent conflict was positively associated with agency costs ($\beta = .641, p < .001$). Bootstrap analysis further provided preliminary evidence of an indirect association between information asymmetry and agency costs through principal-agent conflict (indirect effect = .310, 95% bootstrap CI [.018, .806]). Within the governance pathway, board independence was positively associated with internal audit effectiveness ($\beta = .458, p = .007$) and strongly associated with managerial accountability ($\beta = .698, p < .001$). Internal audit effectiveness was positively associated with managerial accountability in the conventional bivariate model ($\beta = .397, p = .022$), although this association was less robust under HC3 and eligibility-restricted analyses. Internal audit effectiveness was essentially unrelated to information asymmetry ($\beta = -.006, p = .974$), and board independence did not significantly moderate the internal audit effectiveness-managerial accountability relationship. The findings suggest that information asymmetry, principal-agent conflict and agency costs may represent analytically distinct stages of the agency problem, while internal audit operates within a wider governance architecture in which board independence is particularly important. Given the small, non-probability and cross-sectional sample, the findings are exploratory and require prospective confirmation in a larger independent study.

Keywords: Agency Theory; Internal Audit Effectiveness; Information Asymmetry; Agency Costs; Board Independence; Managerial Accountability.

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I. INTRODUCTION

The separation of ownership from managerial control remains one of the central problems of corporate governance. Shareholders and other capital providers delegate substantial authority to managers, who possess specialized expertise and exercise day-to-day control over organizational resources. Although such delegation facilitates professional management and organizational efficiency, it also creates the

possibility that managers may pursue objectives, risk preferences or decisions that do not fully coincide with those of principals. Agency Theory conceptualizes this problem as arising from the combination of delegated authority, divergent interests and imperfect observability of managerial behavior (Jensen & Meckling, 1976; Fama & Jensen, 1983; Eisenhardt, 1989).

A central feature of this relationship is information asymmetry. Managers normally possess more detailed, timely and operationally specific information than shareholders and non-executive directors. This informational advantage is not inherently dysfunctional; it is partly a consequence of managerial specialization. It becomes a governance problem, however, where principals cannot independently determine whether information presented by management is complete, timely and sufficiently neutral, or whether managerial decisions genuinely advance organizational interests. Information asymmetry may therefore increase the opportunity for adverse information to be delayed, selectively communicated or inadequately escalated, while making managerial conduct more difficult for principals to evaluate. Ajaegbu and Mmayie (2025) similarly identify information asymmetry as one of the principal conditions through which agency conflict is intensified, because agents possess superior information that principals cannot completely observe or verify.

This distinction is important because information asymmetry, principal-agent conflict and agency costs are related but conceptually different. Information asymmetry concerns unequal access to organizational information. Principal-agent conflict concerns divergence between managerial conduct, priorities or preferences and the interests of principals or the organization. Agency costs concern the resources consumed or economic value lost because principals must monitor agents, agents must provide assurances concerning their conduct, and some degree of misalignment remains despite these mechanisms. Jensen and Meckling (1976) distinguish monitoring expenditure, bonding expenditure and residual loss as the principal components of agency costs. Ajaegbu and Mmayie (2025) similarly move from information asymmetry and conflicting interests to the costs generated by those conflicts, including monitoring, bonding and residual losses.

This sequence suggests an important theoretical possibility that deserves more explicit empirical attention: information asymmetry may represent an antecedent condition associated with the emergence of principal-agent conflict, while agency costs may arise as a consequence of managing or failing to eliminate such conflict. In other words, the agency problem may be more usefully conceptualized as a process than as a collection of interchangeable variables.

The problem is particularly important in financial institutions. Banks, securities firms, asset managers, finance companies, insurance institutions and other financial-service organizations operate through extensive delegation, complex information systems and substantial professional judgement. Managers may exercise significant discretion over credit, investments, trading, liquidity, financial reporting, provisioning, risk acceptance and the allocation of organizational resources. At the same time, shareholders, customers, investors, creditors, regulators and boards depend heavily on information produced within the organization. Weaknesses in monitoring or information quality may therefore affect not only shareholders but also customers,

markets and, in sufficiently large institutions, the wider financial system.

Corporate governance mechanisms have developed partly to address these problems. Boards of directors, audit committees, incentive arrangements, regulatory supervision, external auditing, internal controls and market discipline are intended to constrain managerial discretion, improve transparency and increase accountability. Yet the formal existence of such mechanisms does not necessarily guarantee effective monitoring. Boards frequently depend on information prepared or selected by the same management they are expected to oversee. External auditing provides important independent assurance but remains predominantly periodic and financial-reporting oriented. Incentive arrangements may align managerial and shareholder interests in some circumstances while encouraging short-termism or excessive risk-taking in others. The effectiveness of governance therefore depends not merely on whether monitoring structures exist, but on whether they provide sufficiently independent information and meaningful managerial accountability (OECD, 2023).

Within this governance architecture, internal audit occupies a distinctive position. Contemporary internal auditing extends considerably beyond transaction checking and financial verification. The Global Internal Audit Standards position internal auditing as an independent, risk-based assurance and advisory function intended to strengthen governance, risk management, control and organizational decision-making (Institute of Internal Auditors [IIA], 2024). The Three Lines Model similarly distinguishes internal audits from management responsibilities and positions it as an independent source of assurance concerning governance, risk management and internal control (IIA, 2020).

Agency Theory provides a compelling explanation for this role. Adams (1994) argues that internal audit can be understood as an organizational monitoring mechanism that reduces the informational disadvantage experienced by principals and their representatives. Internal auditors possess continuing access to organizational processes and can evaluate management-generated information, examine controls, review compliance, assess risk-management arrangements and communicate significant weaknesses to boards or audit committees. In this sense, internal audit may serve as an informational and accountability bridge between management and those charged with governance.

The theoretical contribution of internal audit may operate through several channels. First, internal audit may reduce information asymmetry by validating management information, examining the systems through which such information is produced and communicating material exceptions independently to governance bodies. Bardhan et al. (2023), for example, reports that firms with higher-quality internal audit functions produce more accurate and precise management forecasts, providing evidence that internal audit quality can contribute to information reliability. Second, internal audit may strengthen managerial accountability by identifying deficiencies, assigning responsibility for

corrective actions, monitoring implementation and escalating significant unresolved matters. Nalukenge et al. (2021) find that internal audit quality contributes to accountability, while Roussy et al. (2020) emphasizes the organizational significance of internal audit where its work produces learning and meaningful corrective change. Third, internal audits may help constrain agency-related costs by identifying inefficient resource use, management override and avoidable control failures before they generate greater organizational losses.

These propositions are central to Ajaegbu and Mmayie's (2025) conceptual framework. Their study explicitly positions internal audit as a governance mechanism capable of reducing information asymmetry, lowering monitoring costs and strengthening managerial accountability. However, the conceptual paper also recognizes that internal audit does not operate independently of its institutional environment. Management override, inadequate resources, weak organizational independence and passive or insufficiently independent boards may constrain the function's capacity to challenge management or ensure that findings result in corrective action.

This observation directs attention to board independence. Internal audit remains organizationally embedded within the entity it evaluates and may depend on management for administrative support, information access and resources. The board or audit committee therefore plays a crucial role in protecting internal audit authority, receiving significant findings without inappropriate filtering and requiring management to address identified weaknesses. The Global Internal Audit Standards similarly emphasize direct board accountability and protection from undue influence as necessary conditions for effective internal auditing (IIA, 2024). Empirical evidence also suggests that audit committee characteristics such as independence, diligence and interaction with internal audit can influence the professionalization and organizational standing of the function (Vadasi et al., 2021).

Board independence may additionally influence managerial accountability directly. An independent board should be better positioned to challenge management representations, require evidence supporting decisions, scrutinize unresolved deficiencies and impose consequences where responsibilities are not fulfilled. This argument is particularly relevant in institutional environments where formal governance independence may differ from substantive independence. Ashiru et al. (2024), for example, identify concerns relating to dominant-owner influence, professional conduct, opportunism and other institutional conditions affecting perceptions of audit committee reliability in the Nigerian banking sector.

Despite this theoretical logic, several gaps remain in literature. First, much of the empirical internal audit literature focuses on either the determinants of internal audit effectiveness or the organizational outcomes associated with stronger internal audit functions. These findings are important but demonstrating that internal audit is associated

with desirable organizational outcomes is not the same as establishing how the underlying mechanisms of Agency Theory relate to one another. Second, prior studies often examine information quality, accountability and agency-cost-related outcomes separately rather than positioning information asymmetry, principal-agent conflict and agency costs as analytically distinct elements of the agency process. Third, internal audit is frequently treated as an explanatory organizational attribute without sufficiently modelling the governance environment that supports or constrains its effectiveness. Fourth, relatively limited evidence integrates these relationships within a Nigerian financial-services setting.

The present study addresses these gaps through a preliminary exploratory empirical extension of Agency Theory and the framework advanced by Ajaegbu and Mmayie (2025). Rather than treating Internal Audit Effectiveness as the sole starting point for all agency relationships, the study distinguishes between two analytically related processes.

➤ *Information Asymmetry -> Principal-Agent Conflict -> Agency Costs*

The first is an agency-problem pathway. The second is a governance-accountability pathway involving Board Independence, Internal Audit Effectiveness and Managerial Accountability. Internal Audit Effectiveness is additionally examined in relation to Information Asymmetry, while Board Independence is examined both as a direct governance correlate and as a possible moderator of the association between Internal Audit Effectiveness and Managerial Accountability.

Because the final empirical specification was refined following preliminary examination of the data, the resulting hypotheses are explicitly treated as exploratory hypotheses rather than as preregistered confirmatory predictions. The objective is therefore not to claim definitive validation of the theoretical framework, but to identify theoretically meaningful patterns that can subsequently be subjected to prospective testing in a larger independent sample.

The study makes four principal contributions. First, it empirically separates information asymmetry, principal-agent conflict and agency costs rather than treating them as interchangeable manifestations of the agency problem. Second, it examines whether principal-agent conflict constitutes an indirect statistical pathway linking information asymmetry and agency costs. Third, it situates internal audit effectiveness within a broader governance architecture by examining its relationships with board independence and managerial accountability. Fourth, it provides preliminary evidence from a Nigerian financial-services context in which formal governance arrangements may not necessarily translate into substantive monitoring effectiveness.

The study therefore contributes not by attempting to demonstrate that internal audit universally eliminates agency conflict, but by asking a more precise question: how are the information, conflict, cost, audit and governance components

of the principal-agent relationship associated with one another in a preliminary financial-sector sample?

II. LITERATURE REVIEW AND EXPLORATORY HYPOTHESES DEVELOPMENT

➤ *Agency Theory as the Theoretical Foundation*

Agency Theory provides the principal theoretical foundation for examining relationships among shareholders, boards, management and assurance mechanisms. Jensen and Meckling (1976) conceptualize an agency relationship as one in which a principal delegates authority to an agent to act on the principal's behalf. Such delegation is economically useful because it permits managerial specialization, but it also gives rise to agency costs when the interests of principal and agent are not perfectly aligned.

Fama and Jensen (1983) further develop the governance implications of separating decision management from residual risk bearing, while Eisenhardt (1989) identifies information systems, outcome uncertainty, incentives and risk allocation as central to Agency Theory. Agency problems become more difficult to control where principals cannot adequately observe agents' behavior or where agents possess information unavailable to principals.

Agency Theory therefore concerns more than overt managerial misconduct. Conflict may arise because principals and agents possess different objectives, time horizons, incentives and risk preferences. These conditions generate demand for governance mechanisms capable of monitoring managerial behavior and improving the information available to principals. Boards, audit committees, ownership structures, incentive arrangements, external audit, internal controls and internal audit can all be interpreted as responses to the problems created by separation of ownership and control (OECD, 2023).

The present study concentrates on six constructs that capture different elements of this governance problem: Information Asymmetry (IA), Principal-Agent Conflict (PAC), Agency Costs (AC), Internal Audit Effectiveness (IAE), Managerial Accountability (MA) and Board Independence (BI). A central premise is that these constructs should not be treated as interchangeable. Rather, they represent conceptually distinct components of the agency relationship and the governance architecture developed to address it.

➤ *Distinguishing Information Asymmetry, Principal-Agent Conflict and Agency Costs*

• *Information Asymmetry*

Information asymmetry concerns unequal access to relevant information. In corporations, managers ordinarily possess more complete and timely information about operations than shareholders and non-executive directors because managers participate directly in day-to-day organizational activities. The existence of such asymmetry is not itself evidence of managerial misconduct. It becomes an

agency concern because management's informational advantage can make managerial behavior less observable and management representations more difficult for principals to verify (Eisenhardt, 1989). Ajaegbu and Mmayie (2025) similarly argue that agents' superior organizational information can prevent principals from fully observing or verifying their conduct and thereby intensify the principal-agent problem.

• *Principal-Agent Conflict*

Principal-agent conflict concerns divergence between the decisions, objectives or behavior of agents and the interests of principals. Such divergence may appear through excessive short-termism, inappropriate risk-taking, inefficient resource allocation, resistance to governance constraints, pursuit of departmental interests or decisions motivated by incentives that are imperfectly aligned with organizational objectives. Information asymmetry can facilitate such divergence because managerial behavior is more difficult to evaluate where principals possess incomplete information. Nevertheless, the two concepts remain distinct: information asymmetry concerns what principals know, whereas principal-agent conflict concerns whether managerial objectives or conduct align with those of principals.

• *Agency Costs*

Agency costs concern the economic and organizational consequences arising because principal and agent interests cannot be costless and perfectly aligned. Jensen and Meckling (1976) distinguish expenditures by principals to monitor agents, bonding expenditures undertaken by agents and residual loss remaining despite monitoring and bonding arrangements. Accordingly, agency costs should also be distinguished from conflict itself. Monitoring expenditure may arise because principals anticipate possible divergence, while residual loss arises where divergence cannot be completely eliminated.

• *Information Asymmetry -> Principal-Agent Conflict -> Agency Costs*

The arrows represent theoretically ordered associations rather than causal effects established by the present cross-sectional design.

➤ *Internal Audit Through the Lens of Agency Theory*

Adams (1994) argues explicitly that Agency Theory provides a useful framework for explaining the existence, responsibilities and organizational positioning of internal audit. Internal audit can provide principals and their representatives with monitoring that would otherwise be difficult to obtain directly.

The contemporary mandate reinforces this role. The IIA's Global Internal Audit Standards identify governance of the internal audit function, independent positioning, board oversight, resource management, effective communication and monitoring of action plans as central components of effective internal auditing (IIA, 2024). Internal audits may examine operational processes, risk management, compliance, information systems, management decision

processes, internal controls and implementation of corrective actions.

However, the existence of an internal audit department and the effectiveness of internal audit are not synonymous. Turetken et al. (2020) demonstrate that internal audit effectiveness is multidimensional and that its operationalization and determinants vary across organizational settings. Ashfaq et al. (2023) likewise identify objectivity, competence and work performance among factors associated with stakeholder assessments of internal audit effectiveness and reliance. Roussy et al. (2020) further emphasize that internal audit achieves organizational significance when its work contributes to organizational learning and positive change rather than merely the completion of audit activities.

The present study consequently treats IAE as reflecting the ability of internal audit to perform its governance role through organizational independence, professional competence, adequate resources, access to information, risk-focused work, reliable audit evidence, effective communication and follow-up of corrective actions.

➤ *The Governance Context: Board Independence*

Internal audit does not operate outside the organization it audits. Its effectiveness may therefore be affected by the same managerial relationships it is expected to evaluate. Internal auditors ordinarily require access to management, organizational records, systems, staff and operational processes, while administrative resources may also depend partly on senior management. The board, particularly through its audit committee, is important in managing this structural tension.

The Global Internal Audit Standards identify being authorized by the board, positioned independently and overseen by the board among the principles of effective internal auditing (IIA, 2024). Vadasi et al. (2021) find that audit committee characteristics including independence, diligence and interaction with internal audit influence internal audit professionalization.

Formal independence and substantive independence are not necessarily identical. Ashiru et al. (2024), using evidence from Nigerian banking, report that perceptions of audit committee independence and reliability are conditioned by the institutional environment. Consequently, the present study conceptualizes BI in behavioral and substantive terms: the capacity of the board to exercise independent judgement, challenge management, protect assurance processes from inappropriate interference and hold management answerable for unresolved matters.

➤ *Information Asymmetry and Principal-Agent Conflict*

Agency Theory predicts that the informational advantage of the agent makes monitoring more difficult for the principal. Where principals cannot adequately observe managerial behavior or independently validate management-generated information, they face greater uncertainty about whether managerial decisions are consistent with their

interests (Eisenhardt, 1989). Ajaegbu and Mmayie (2025) explicitly argue that information asymmetry exacerbates principal-agent conflict because agents' superior access to organizational information allows managerial behavior to remain imperfectly observable.

- *EH1: Information Asymmetry is Positively Associated with Principal-Agent Conflict.*

➤ *Principal-Agent Conflict and Agency Costs*

Agency costs exist because delegation and interest divergence cannot be managed without cost. Jensen and Meckling's (1976) framework identifies monitoring expenditure, bonding expenditure and residual loss as components of agency costs. The magnitude of these costs should therefore be related conceptually to the extent of principal agent divergence. Where managerial and principal interests are relatively well aligned, less corrective monitoring may be necessary and fewer residual losses should arise. Conversely, where conflict is substantial, organizations may incur greater monitoring expenditure, duplicated assurance activity, remediation costs, resource inefficiency or losses resulting from decisions inconsistent with organizational objectives.

- *EH2: Principal-agent conflict is positively associated with agency costs.*

➤ *Principal-Agent Conflict as an Intervening Mechanism*

EH1 and EH2 together suggest a more structured interpretation of the agency process. Information asymmetry does not necessarily constitute an agency's cost in itself. Rather, it makes managerial conduct more difficult for principals to evaluate. Where this informational advantage contributes to divergence between managerial conduct and principal interests, the resulting conflict can generate monitoring requirements, corrective expenditure and residual losses.

IA -> PAC -> AC

This ordering separates the information condition from the interest-alignment problem and distinguishes the agency problem itself from its economic and organizational consequences.

- *EH3: Principal-agent conflict mediates the positive relationship between information asymmetry and agency costs, such that greater information asymmetry is associated with greater principal-agent conflict, which is in turn associated with higher agency costs.*

Because the present research uses cross-sectional survey data, mediation refers to a statistical indirect association consistent with the proposed theoretical mechanism. Prospective or longitudinal evidence would be required to establish the temporal sequence more strongly.

➤ *Internal Audit Effectiveness and Information Asymmetry*

The informational role of internal audit provides one of the clearest theoretical links between internal auditing and

Agency Theory. Internal auditors have access to organizational records, systems, employees and processes and can independently evaluate representations made by management. Ajaegbu and Mmayie (2025) identify the reduction of information asymmetry as a central mechanism through which internal audit may mitigate agency problems.

Related empirical evidence supports the informational relevance of internal audit without directly establishing the specific relationship examined here. Eulerich and Lohmann (2022) link information-asymmetrically-related organizational characteristics with the scale of internal audit monitoring. Bardhan et al. (2023) find that firms with higher-quality internal audit functions issue management forecasts that are more accurate and more precise. Kaawaase et al. (2021) also report an association between internal audit quality and financial reporting quality in financial institutions. These findings suggest that internal audit can matter to organizational information quality, but they do not establish that effective internal audit necessarily eliminates management's structural information advantage.

- *EH4: Internal audit effectiveness is negatively associated with information asymmetry.*

➤ *Internal Audit Effectiveness and Managerial Accountability*

Accountability concerns the obligation to explain decisions, accept responsibility for outcomes and respond to deficiencies. Within Agency Theory, accountability increases the observability and reviewability of managerial conduct. Internal audit can contribute by documenting deficiencies, identifying responsible process owners, obtaining management responses, monitoring implementation and escalating significant unresolved matters.

Nalukenge et al. (2021) find that internal audit quality and punitive measures independently predict accountability in Ugandan statutory corporations. Roussy et al. (2020) emphasize that internal audit becomes organizationally significant when audit effectiveness produces learning and positive organizational change. The Global Internal Audit Standards similarly include communication of engagement results and monitoring of action plans among the principles governing effective internal audit services (IIA, 2024).

- *EH5: Internal audit effectiveness is positively associated with managerial accountability.*

➤ *Board Independence and Internal Audit Effectiveness*

Internal audit effectiveness is influenced not only by the competence and conduct of internal auditors but also by the organizational context within which they operate. A technically capable function may be unable to exercise sufficient influence where management can restrict its scope, resources, access or reporting channels. Board independence therefore matters because the board can provide internal audit with institutional protection from inappropriate executive influence.

The Global Internal Audit Standards treat board authorization, independent positioning and board oversight as foundational principles governing the internal audit function (IIA, 2024). Vadasi et al. (2021) similarly reports that audit committee independence, diligence and interaction with internal audit influence internal audit professionalization. The Nigerian context makes this relationship particularly relevant because Ashiru et al. (2024) show that substantive audit committee independence cannot necessarily be inferred from formal committee composition.

- *EH6: Board independence is positively associated with internal audit effectiveness.*

➤ *Board Independence and Managerial Accountability*

The board possesses a direct monitoring responsibility independent of internal audit. Fama and Jensen (1983) emphasize the importance of decision control where decision-makers do not bear the full residual consequences of their decisions. The OECD (2023) likewise assigns boards responsibility for monitoring management, providing objective judgement, overseeing conflicts of interest and establishing effective accountability.

An independent board should theoretically be better able to demand explanations for managerial decisions, challenge management representations, request additional evidence, insist on remediation and retain unresolved issues within the governance agenda. Nevertheless, empirical evidence regarding board independence and organizational outcomes is not uniformly positive across contexts. Kaawaase et al. (2021), for example, find that board independence did not significantly predict financial reporting quality in their Ugandan financial-institution sample. This inconsistency reinforces the value of examining board independence against the more specific outcome of managerial accountability.

- *EH7: Board independence is positively associated with managerial accountability.*

➤ *Board Independence as a Moderator of the Internal Audit-Accountability Relationship*

A further theoretical possibility is that BI alters the extent to which IAE translates into managerial accountability. Internal audit ordinarily identifies issues and recommends or agrees corrective action, but it does not possess executive authority to compel management to act. Its ability to translate findings into managerial accountability may therefore depend on whether those charged with governance are willing and able to support escalation and require remediation.

Ajaegbu and Mmayie (2025) identify management override as a constraint on internal audit and note that the problem may be particularly pronounced where boards are passive or lack independence. Vadasi et al.'s (2021) evidence that audit committee independence and interaction with internal audit influence internal audit professionalization provides related empirical support for the broader proposition that internal audit's organizational position depends partly on governance characteristics.

- *EH8: Board independence moderates the positive relationship between internal audit effectiveness and managerial accountability, such that the relationship is stronger at higher levels of board independence.*

➤ Integrating the Two Theoretical Pathways

The revised framework contains two connected but analytically distinct components. The first concerns the formation and consequences of the agency problem:

Information Asymmetry -> Principal-Agent Conflict -> Agency Costs

The second concerns the governance of architecture:

BI -> IAE; IAE -> MA; BI -> MA; IAE -> IA; and IAE x BI -> MA

➤ Summary of Exploratory Hypotheses

Table 1 Summary of Exploratory Hypotheses

Hypothesis	Exploratory proposition	Direction
EH1	Information asymmetry is positively associated with principal-agent conflict.	Positive
EH2	Principal-agent conflict is positively associated with agency costs.	Positive
EH3	PAC mediates the IA-agency cost relationship.	Positive indirect association
EH4	Internal audit effectiveness is associated with information asymmetry.	Negative
EH5	Internal audit effectiveness is associated with managerial accountability.	Positive
EH6	Board independence is associated with internal audit effectiveness.	Positive
EH7	Board independence is associated with managerial accountability.	Positive
EH8	Board independence strengthens the positive IAE-MA relationship.	Positive interaction

➤ Literature Gap and Theoretical Contribution

The literature establishes the importance of information, observability, divergent interests and agency costs; the relevance of Agency Theory to internal audit; the multidimensional nature of internal audit effectiveness; and the influence of governance arrangements on the internal audit function. However, these streams do not by themselves establish how the principal concepts of Agency Theory fit together empirically.

The present study therefore contributes by making three distinctions. First, it distinguishes information disadvantages from interest divergence. Second, it distinguishes interest divergence from the costs generated by monitoring and residual misalignment. Third, it distinguishes the agency's problem itself from the governance architecture designed to address it.

The central conceptual proposition underlying the paper is therefore that agency-problem formation and agency-governance response are related, but they should not be treated as the same empirical process. Internal audit remains central to the governance response, but its organizational contribution may depend upon the environment in which it operates.

This structure does not assume that all agency constructs are consequences of internal audit effectiveness. Instead, it first asks how the agency problem itself is organized and then examines how internal audit and board governance relate to information and accountability.

➤ Exploratory Status of the Hypotheses

The data collection was initially motivated by the broader conceptual framework developed from Agency Theory and Ajaegbu and Mmayie (2025). However, the precise eight-hypothesis specification reported in this study was refined following preliminary examination of the collected data and reconsideration of the theoretical ordering among IA, PAC and AC. The hypotheses are therefore described throughout as exploratory hypotheses. A future study using an independent sample could treat theoretically refined relationships as prospective confirmatory hypotheses.

III. RESEARCH METHODOLOGY

➤ Research Design and Analytical Orientation

The study employed a quantitative cross-sectional survey design to examine relationships among Information Asymmetry (IA), Principal-Agent Conflict (PAC), Agency Costs (AC), Internal Audit Effectiveness (IAE), Managerial Accountability (MA) and Board Independence (BI). A cross-sectional survey was appropriate for the preliminary purpose of obtaining comparable assessments of governance and agency conditions from professionals with relevant organizational experience.

The study is explicitly exploratory rather than confirmatory. Data collection was originally motivated by the broader conceptual framework developed from Agency Theory and Ajaegbu and Mmayie (2025). Following preliminary examination of the data and reconsideration of the theoretical ordering among the agency constructs, the empirical specification was refined into the eight exploratory hypotheses developed in Section 2. This distinction is important for research transparency; the revised hypotheses are not presented as though they had been preregistered or specified without prior exposure to the preliminary data.

Because all substantive constructs were measured at a single point in time, the statistical analyses estimate associations rather than demonstrated causal effects. This qualification is especially important for mediation analysis.

The indirect relationship examined in this study is therefore interpreted as a statistical indirect association consistent with the proposed theoretical sequence rather than evidence that temporal mediation has been established (Maxwell & Cole, 2007).

➤ *Study Setting and Intended Population*

The intended empirical setting was the Nigerian financial-services sector. The target population consisted of professionals whose roles provided exposure to internal audit, governance, control, financial management, risk management, compliance or senior organizational decision-making within Nigerian financial institutions. Financial institutions constitute an appropriate setting because their operations depend extensively on delegated authority, specialized professional judgement, complex information systems and fiduciary relationships.

➤ *Sampling and Recruitment*

The study used non-probability purposive sampling, supplemented by professional-network and referral-based distribution. Purposive sampling was appropriate because meaningful responses required participants with sufficient familiarity with organizational governance and assurance arrangements. The questionnaire was therefore circulated through relevant professional networks and direct professional outreach rather than distributed indiscriminately to the general population.

This recruitment strategy facilitated access to a specialized professional group for which no comprehensive sampling frame was available. However, it also means that the probability of selection for individual members of the wider Nigerian financial-services population was unknown. The sample should therefore not be interpreted as statistically representative of all Nigerian financial institutions.

➤ *Screening Criteria and Analytical Sample*

The questionnaire included three screening conditions intended to identify respondents with sufficient relevance to the study context. Respondents were asked whether they currently worked in a Nigerian financial institution, whether they had spent at least one year in their current institution, and whether they possessed sufficient knowledge of their organization's internal audit and governance arrangements to provide informed responses.

A total of 33 complete questionnaires were available for analysis. Among these respondents, 23 (69.7%) reported currently working in a Nigerian financial institution, 31 (93.9%) had at least one year of current organizational tenure,

and 30 (90.9%) indicated sufficient knowledge of internal audit and governance processes. Twenty respondents satisfied all three screening conditions simultaneously.

All 33 completed observations were retained for the primary exploratory analysis. The full sample is therefore interpreted as a broader professional sample relevant to the study constructs rather than as a sample composed exclusively of current Nigerian financial-institution employees. This decision preserves all complete responses while making the inclusion boundary explicit. To assess whether the principal findings depended materially on that boundary, sensitivity analyses were undertaken using the 23 respondents currently working in Nigerian financial institutions and the 20 respondents satisfying all three original screening conditions.

➤ *Sample Size and Inferential Scope*

No claim is made that 33 observations constitute an adequately powered confirmatory sample for the full theoretical model. The study is deliberately positioned as a preliminary exploratory investigation. The available sample places meaningful limitations on statistical power, precision of parameter estimates, detection of interaction effects and formal validation of the measurement structure.

No post-hoc power calculation is used to retrospectively declare the sample adequate. Instead, the analysis places greater emphasis on estimated effect magnitude, exact p-values, confidence intervals, bootstrap uncertainty, consistency across Pearson and rank-based estimates, alternative measurement specifications and eligibility-based sensitivity analyses.

➤ *Questionnaire Development*

The survey instrument contained respondent-profile and eligibility questions followed by 38 substantive items measuring the six constructs included in the empirical framework. The items were developed as theory-informed indicators rather than reproduced wholesale from a single previously validated scale. Their content was derived from Agency Theory, prior empirical internal audit research, the governance mechanisms discussed by Ajaegbu and Mmayie (2025), and contemporary internal audit governance principles.

All substantive items used a five-point Likert response format: 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; and 5 = Strongly agree. The questionnaire contained nine IAE items, five IA items, five AC items, six MA items, six BI items and seven PAC items.

➤ *Operationalization of Constructs*

Table 2 Measurement of Study Constructs

Construct	Operational meaning	Items	Principal dimensions
Internal Audit Effectiveness (IAE)	Extent to which internal audit possesses the organizational position, capability, resources and processes required to provide credible assurance and promote corrective action	9	Board access; freedom from management interference; information access; competence; resources; risk-based planning; evidence; communication; follow-up

Information Asymmetry (IA)	Extent to which management possesses or controls material organizational information not equally or promptly available to governance bodies	5	Management information advantage; reporting delay; information filtering; insufficient board information; knowledge gap
Agency Costs (AC)	Perceived organizational costs or inefficiencies associated with monitoring, divergent conduct and unresolved governance weaknesses	5	Inefficient resource use; low-value activity; control override; remediation costs; duplicated monitoring
Managerial Accountability (MA)	Extent to which managers are required to explain decisions, accept responsibility and demonstrate corrective action	6	Explanation; assigned responsibility; evidence of completion; escalation; performance accountability; consequences
Board Independence (BI)	Board's substantive capacity to exercise objective judgement and challenge management without inappropriate influence	6	Independent judgement; management challenge; direct audit communication; protection of internal audit; enforcement; authority
Principal-Agent Conflict (PAC)	Extent of perceived divergence between managerial conduct or priorities and organizational/principal interests	7	Priority divergence; self/departmental interests; risk disagreement; short-termism; resistance; incentive misalignment; tension

Table 2 summarizes the operationalization of the six constructs.

- *Internal Audit Effectiveness*

IAE was measured through nine indicators capturing direct board access, freedom from inappropriate management interference, access to records, professional competence, adequate resources, risk-based planning, evidence quality, communication of findings and follow-up of agreed corrective action. The construct therefore captures both technical and organizational dimensions of effective internal auditing.

- *Information Asymmetry*

IA was measured using five items addressing management's informational advantage relative to governance bodies, including management control of information, delay reporting, information filtering, insufficient board information and management-board knowledge gaps. Higher scores indicate greater perceived information asymmetry.

- *Agency Costs*

AC was measured using five items relating to inefficient use of organizational resources, expenditure on low-value activities, control override or unauthorized decisions, remediation expenditure arising from unresolved weaknesses and duplicated monitoring activity. The measure operationalizes agency costs as organizational inefficiencies and monitoring burdens associated with imperfect principal-agent alignment.

- *Managerial Accountability*

MA was measured using six indicators assessing whether managers were required to explain important decisions, whether responsibility was clearly assigned, whether evidence of corrective implementation was required, whether significant unresolved matters were escalated, whether managers were evaluated against risk and control responsibilities, and whether failure to fulfil responsibilities could attract consequences.

- *Board Independence*

BI was measured using six items capturing substantive rather than solely numerical independence. The indicators addressed independent judgement, willingness to challenge management, direct communication with internal audit, protection of internal audit from inappropriate interference, willingness to require corrective action and authority to hold management accountable.

- *Principal-Agent Conflict*

PAC was measured using seven items capturing divergent priorities, pursuit of personal or departmental objectives, differences in risk preferences, short-term orientation, resistance to board constraints, incentive misalignment and management-board tension. Higher scores indicate greater perceived principal-agent conflict.

➤ *Construct Scoring and Missing Data*

Responses to substantive items were coded from 1 to 5 in accordance with the Likert response categories. A respondent-level score for each construct was calculated as the arithmetic mean of all items comprising that construct. Mean scoring retained the original 1-5 response metric and allowed direct comparison across constructs despite differences in item count.

$$IAE_i = (IAE_{i1} + IAE_{i2} + \dots + IAE_{i9}) / 9$$

All 33 respondents provided complete responses to all 38 substantive items. Consequently, no substantive values were imputed, and no observations were removed because of item-level missingness.

➤ *Reliability and Measurement Considerations*

Internal consistency was assessed using Cronbach's coefficient alpha for each multi-item construct (Cronbach, 1951). No item was deleted solely to increase alpha because data-driven item elimination in a sample of this size could capitalize heavily on sampling variation and distort the theoretically intended constructs.

Reliability is not treated as equivalent to construct validity. Formal exploratory factor analysis and confirmatory factor analysis were not performed because 38 substantive indicators and only 33 observations would not support a stable latent measurement model. The absence of factor validation is acknowledged explicitly as a limitation and should be addressed in a substantially larger independent sample.

➤ Common-Method Considerations

All six substantive constructs were measured from the same respondent through the same questionnaire and at the same point in time, creating a potential risk of common-method variance. The study does not claim that common-method bias has been statistically eliminated and does not use a Harman single-factor test as evidence that such bias is absent. Instead, the risk is treated as a design limitation consistent with the recommendations of Podsakoff et al. (2003).

➤ Statistical Analysis

Statistical analysis was undertaken in Python. Data management, Likert coding and composite-score construction were conducted using pandas and NumPy. Correlation and distributional analyses used SciPy, while ordinary least-squares regression and diagnostic procedures were estimated using statsmodels.

The analytical sequence comprised descriptive analysis, internal-consistency assessment, correlation analysis, hypothesis-specific regression analysis, bootstrap mediation, moderated regression and robustness/sensitivity analyses.

➤ Descriptive and Distributional Analysis

Construct distributions were summarized using means, standard deviations, minimums and maximums. Distributional characteristics were examined using skewness and the Shapiro-Wilk test. Because IAE displayed substantial negative skew, Pearson correlations were supplemented with Spearman rank-order correlations. Heteroscedasticity was assessed for principal regression specifications, and robust standard errors were examined where appropriate.

➤ Correlation Analysis

Pearson product-moment correlations were used to describe the direction and magnitude of linear bivariate associations among the six constructs. Because of the small sample and non-normality of IAE, corresponding Spearman coefficients were also examined as robustness checks.

➤ Direct-Association Models

EH1, EH2 and EH4-EH7 were evaluated using ordinary least-squares regression. For each model, the unstandardized coefficient, standard error, standardized coefficient, 95% confidence interval, p-value, R-squared and adjusted R-squared, where relevant, were considered. Statistical significance was evaluated using a nominal two-sided alpha of .05, while effect magnitude and confidence intervals were emphasized because of the exploratory design.

- EH1: $PAC_i = \beta_0 + \beta_1 IA_i + \varepsilon_i$

- EH2: $AC_i = \beta_0 + \beta_1 PAC_i + \varepsilon_i$
- EH4: $IA_i = \beta_0 + \beta_1 IAE_i + \varepsilon_i$
- EH5: $MA_i = \beta_0 + \beta_1 IAE_i + \varepsilon_i$
- EH6: $IAE_i = \beta_0 + \beta_1 BI_i + \varepsilon_i$
- EH7: $MA_i = \beta_0 + \beta_1 BI_i + \varepsilon_i$

➤ Mediation Analysis

EH3 examined whether PAC statistically mediated the positive relationship between IA and AC. The indirect association was calculated as the product of the IA-to-PAC path and the PAC-to-AC path controlling for IA. Inference used a non-parametric bootstrap with 10,000 resamples and random seed 20260929. A percentile 95% bootstrap confidence interval was used. This approach avoids assuming that the sampling distribution of the product of coefficients is normal (Preacher & Hayes, 2008).

- Model 3A (total association): $AC_i = \beta_0 + \beta_1 IA_i + \varepsilon_i$
- Model 3B (a path): $PAC_i = \beta_0 + \beta_1 IA_i + \varepsilon_i$
- Model 3C (b and c' paths): $AC_i = \beta_0 + \beta_1 IA_i + \beta_2 PAC_i + \varepsilon_i$
- Indirect association = β_1 (Model 3B) $\times$ β_2 (Model 3C)

Because the data are cross-sectional, the terms indirect association and statistical mediation are used cautiously. Cross-sectional mediation cannot establish the temporal process required for strong causal mediation claims (Maxwell & Cole, 2007).

➤ Moderation Analysis

EH8 proposed that BI would moderate the positive association between IAE and MA. IAE and BI were mean-centered before construction of the interaction term. The principal coefficient of interest was the interaction coefficient, and the change in R-squared attributable to the interaction was also considered.

$$MA_i = \beta_0 + \beta_1 IAE_i + \beta_2 BI_i + \beta_3 (IAE_i \times BI_i) + \varepsilon_i$$

➤ Heteroscedasticity-Robust Inference

Given the small sample and the skewed distribution of IAE, supplementary inference using HC3 heteroscedasticity-consistent standard errors was examined for relevant governance regressions and the moderation model. Long and Ervin (2000) provide simulation evidence supporting HC3 in smaller samples, while Hayes and Cai (2007) discuss the usefulness of heteroscedasticity-consistent inference in OLS models.

➤ Joint Governance Analysis

A supplementary model examined whether IAE and BI independently explained variation in MA when entered simultaneously. This analysis was conducted because IAE, BI and MA are theoretically interconnected and because significant bivariate associations do not establish that each predictor contributes independently once the other governance variable is held constant.

$$MA_i = \beta_0 + \beta_1 BI_i + \beta_2 IAE_i + \varepsilon_i$$

➤ *Measurement-Overlap Robustness Test*

Two original BI items referred directly to the relationship between the board and internal audit. Because these items could mechanically increase the BI-IAE association, a reduced four-item Board Independence measure was created excluding the two explicitly internal-audit-related indicators. The BI-IAE and BI-MA models were then re-estimated using the reduced measure.

➤ *Eligibility-Based Sensitivity Analysis*

The primary analysis used all 33 complete responses. The first restricted analysis used the 23 respondents who explicitly reported currently working in a Nigerian financial institution, while the strictest analysis used the 20 respondents satisfying all three original screening conditions. The purpose was not to select whichever sample produced the most favorable findings, but to determine whether substantive conclusions changed under stricter eligibility assumptions.

➤ *Multiple Testing and Exploratory Inference*

Eight primary exploratory propositions were examined using nominal two-sided p-values at $\alpha = .05$. No claim is made that these tests form a preregistered family of confirmatory hypotheses. Exact p-values, confidence intervals, effect magnitudes and sensitivity analyses are therefore reported so that each relationship can be evaluated individually.

➤ *Reproducibility*

The analytical workflow was designed to be reproducible. The five-point response coding was applied consistently, each construct was generated using a predefined

➤ *Summary of the Analytical Framework*

arithmetic mean of its constituent items, no substantive missing values were imputed, all 33 completed observations were retained for the primary analysis, and the regression equations used for each exploratory hypothesis are stated explicitly. The mediation procedure, number of bootstrap resamples and random seed are also disclosed.

➤ *Ethical Considerations*

Participation in the study was voluntary. Respondents were informed of the purpose of the research and participated of their own volition. Individual responses were treated confidentially, and the findings were analysed and reported only in aggregate form so that individual respondents or organisations could not be identified from the reported results. The study involved a professional survey on internal audit, governance and organisational practices and did not involve experimental intervention. No personal or sensitive identifying information is reported in this article.

➤ *Methodological Limitations*

The main methodological constraints are the small non-probability sample, the concentration of internal audit respondents, inclusion of respondents who did not all satisfy every original eligibility requirement, single-source cross-sectional measurement, inability to conduct factor-analytic validation and the exploratory re-specification of the eight-hypothesis model after preliminary inspection of the data. These limitations are incorporated into the interpretation of results rather than treated as issues that can be eliminated through statistical complexity.

Table 3 Analytical Strategy

Exploratory hypothesis	Statistical model	Primary inferential criterion
EH1: IA -> PAC	Simple OLS regression	Positive coefficient; 95% CI; p
EH2: PAC -> AC	Simple OLS regression	Positive coefficient; 95% CI; p
EH3: IA -> PAC -> AC	Regression-based mediation with 10,000 bootstrap resamples	95% bootstrap CI for indirect association
EH4: IAE -> IA	Simple OLS regression	Negative coefficient; 95% CI; p
EH5: IAE -> MA	Simple OLS regression + rank robustness	Positive coefficient; 95% CI; p
EH6: BI -> IAE	Simple OLS regression + measurement-overlap sensitivity	Positive coefficient; 95% CI; p
EH7: BI -> MA	Simple OLS regression + measurement-overlap sensitivity	Positive coefficient; 95% CI; p
EH8: IAE × BI -> MA	Mean-centered moderated OLS regression	Interaction coefficient; CI; p; Delta R-squared

The final exploratory analytical framework combines the agency-problem pathway IA -> PAC -> AC with direct governance relationships involving IAE, IA, MA and BI, and an IAE x BI moderation of MA. The methodology

deliberately avoids attempting a complex latent-variable or structural-equation model that the available sample cannot support.

IV. RESULTS

➤ Sample Characteristics and Data Completeness

Table 4 Respondent Characteristics

Characteristic	Category	n	%
Primary professional role	Internal audit	23	69.7
	Finance/accounting	3	9.1
	Senior/executive management	3	9.1
	Internal control	2	6.1
	Risk management	1	3.0
	Compliance	1	3.0
Professional experience	1-3 years	3	9.1
	4-6 years	5	15.2
	7-10 years	5	15.2
	11-15 years	7	21.2
	More than 15 years	13	39.4
Tenure in current institution	1-2 years	12	36.4
	3-5 years	10	30.3
	6-10 years	2	6.1
	More than 10 years	9	27.3
Institution type	Other financial institution	16	48.5
	Commercial/merchant bank	7	21.2
	Microfinance/mortgage bank	5	15.2
	Broker/dealer	2	6.1
	Fund/portfolio manager	1	3.0
	Finance company	1	3.0
	Investment/asset manager	1	3.0

The final dataset comprised 33 complete responses. All respondents answered all 38 substantive measurement items; consequently, no construct-level observations were lost because of missing data and no imputation was required.

The sample was dominated by experienced assurance and governance professionals. Internal audit accounted for 23 respondents (69.7%), while 25 respondents (75.8%) reported at least seven years of professional experience and 20 (60.6%) reported more than ten years.

With respect to the original screening conditions, 23 respondents (69.7%) reported currently working in a Nigerian financial institution, 31 (93.9%) had spent at least one year in their current institution, and 30 (90.9%) reported sufficient knowledge of their institution's internal audit and governance arrangements. Twenty respondents satisfied all three screening conditions simultaneously.

➤ Reliability, Descriptive Statistics and Distributional Properties

Table 5 Descriptive Statistics and Internal Consistency

Construct	Items	Mean	SD	Minimum	Maximum	Cronbach's alpha
Internal Audit Effectiveness (IAE)	9	4.091	.707	1.444	5.000	.932
Information Asymmetry (IA)	5	2.964	.997	1.000	4.600	.897
Agency Costs (AC)	5	3.176	.879	1.400	4.600	.858
Managerial Accountability (MA)	6	3.854	.523	3.000	5.000	.775
Board Independence (BI)	6	3.874	.742	2.000	5.000	.874
Principal-Agent Conflict (PAC)	7	2.965	.951	1.000	4.714	.934

All six constructs exceeded the conventional .70 internal-consistency threshold. IAE and PAC demonstrated particularly high internal consistency, with $\alpha = .932$ and $\alpha = .934$ respectively. IA ($\alpha = .897$), BI ($\alpha = .874$) and AC ($\alpha = .858$) also demonstrated strong internal consistency, while MA produced an acceptable coefficient of $\alpha = .775$. The descriptive results indicate comparatively favorable assessments of IAE (M = 4.091), BI (M = 3.874) and MA (M

= 3.854). IA (M = 2.964) and PAC (M = 2.965) were situated close to the scale midpoint, while AC was slightly higher (M = 3.176). At item level, the highest-rated IAE item concerned the sufficiency and reliability of evidence supporting internal audit findings (M = 4.424), whereas resource adequacy produced the lowest IAE item mean (M = 3.636). Within PAC, the highest-rated item concerned management emphasis on short-term outcomes over sustainable long-term

value ($M = 3.303$). The highest-rated AC item concerned remediation expenditure arising from weaknesses that had not been resolved promptly ($M = 3.515$). Distributional assessment showed that IAE was markedly negatively skewed (skewness = -2.247), with a statistically significant

Shapiro-Wilk test ($W = .769$, $p < .001$). MA also showed a modest departure from normality ($p = .044$). IA, AC, BI and PAC did not exhibit statistically significant departures from normality at the 5% level.

➤ Correlation Analysis

Table 6 Pearson Correlations Among the Study Constructs

Variable	IAE	IA	AC	MA	BI	PAC
IAE	1.000					
IA	-.006	1.000				
AC	-.080	.610***	1.000			
MA	.397*	-.360*	-.201	1.000		
BI	.458**	-.229	-.256	.698***	1.000	
PAC	-.125	.818***	.641***	-.248	-.280	1.000

• Note. * $p < .05$; ** $p < .01$; *** $p < .001$. $N = 33$.

The correlation matrix reveals two particularly clear clusters. Within the proposed agency-problem pathway, IA was strongly positively correlated with PAC ($r = .818$, $p < .001$), PAC was positively correlated with AC ($r = .641$, $p < .001$), and IA was positively correlated with AC ($r = .610$, $p < .001$). Within the governance pathway, BI was strongly positively related to MA ($r = .698$, $p < .001$) and moderately positively related to IAE ($r = .458$, $p = .007$). IAE was also positively associated with MA ($r = .397$, $p = .022$). In contrast, IAE and IA were virtually unrelated ($r = -.006$, $p = .974$).

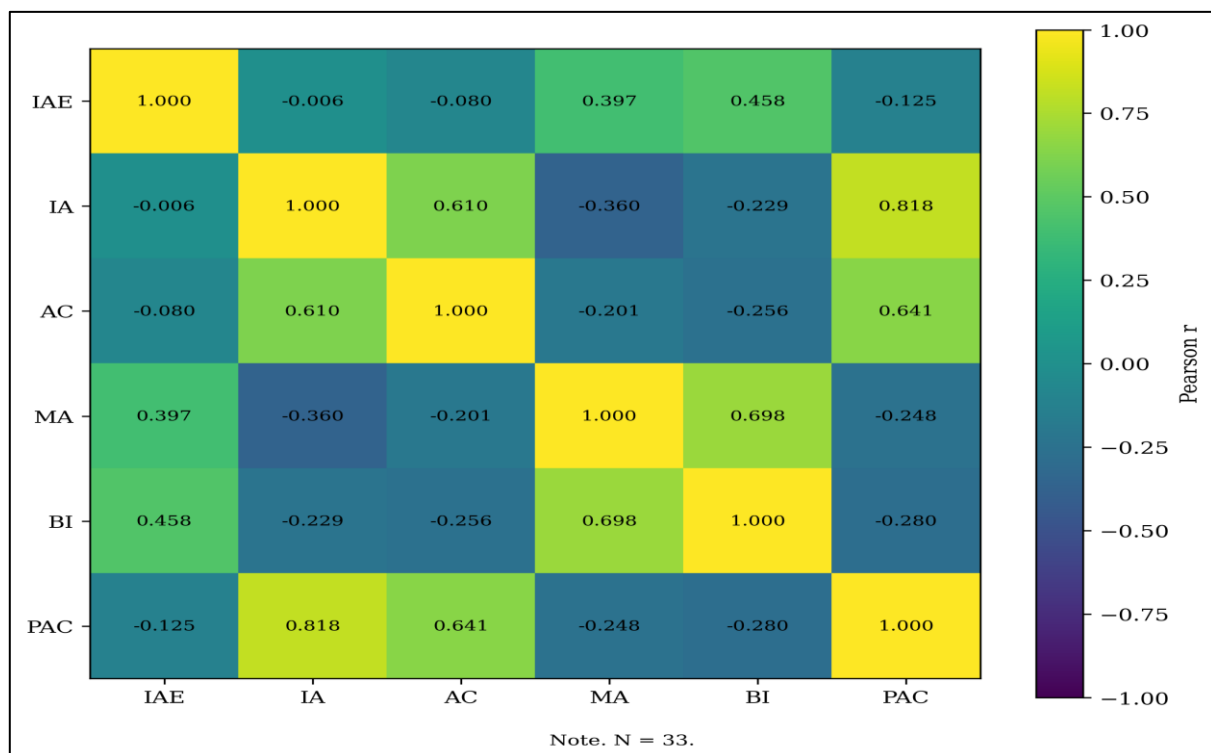


Fig 1 Pearson Correlation Matrix.

• Note. Values are Pearson Correlation Coefficients for the Six Composite Constructs ($N = 33$).

➤ Agency-Problem Pathway

• *EH1: Information Asymmetry and Principal-Agent Conflict*

EH1 proposed that Information Asymmetry would be positively associated with Principal-Agent Conflict.

$$PAC_i = \beta_0 + \beta_1 IA_i + \varepsilon_i$$

Expected sign: $\beta_1 > 0$.

• Key Result: $B = .780$, $SE = .099$, standardized $\beta = .818$, $p < .001$, 95% CI [.579, .981], $R^2 = .669$.

The regression model was statistically significant, $F(1,31) = 62.72$, $p < .001$, and accounted for $R^2 = .669$ of the

observed variation in PAC. IA was strongly positively associated with PAC: $B = .780$, $SE = .099$, $\beta = .818$, $t = 7.920$, $p < .001$, 95% CI [.579, .981]. The direction and magnitude of the result are consistent with EH1.

• *EH2: Principal-Agent Conflict and Agency Costs*

EH2 proposed that PAC would be positively associated with Agency Costs.

$$AC_i = \beta_0 + \beta_1 PAC_i + \varepsilon_i$$

Expected sign: $\beta_1 > 0$.

➤ *EH3: Indirect Association of Information Asymmetry with Agency Costs through Principal-Agent Conflict*

Table 7 Bootstrap Mediation Results for IA -> PAC -> AC

Component	Estimate	Statistical result
Total association, IA -> AC	.538	$p < .001$
Path a, IA -> PAC	.780	$p < .001$
Path b, PAC -> AC controlling for IA	.397	$p = .082$
Direct association, IA -> AC controlling for PAC	.227	$p = .289$
Indirect association, IA -> PAC -> AC	.310	95% bootstrap CI [.018, .806]

EH3 proposed an indirect relationship IA -> PAC -> AC.

The total association between IA and AC was positive ($B = .538$, $p < .001$). The a path from IA to PAC was also positive ($B = .780$, $p < .001$). When IA and PAC were entered simultaneously in the AC outcome model, PAC retained a positive coefficient ($B = .397$, $p = .082$, 95% CI [-.053, .848]), while the direct IA coefficient was reduced to $B = .227$ ($p = .289$, 95% CI [-.203, .658]). The two-predictor outcome model explained $R^2 = .433$ of the observed variation in AC, $F(2, 30) = 11.46$, $p < .001$.

- Key Result: $B = .592$, $SE = .127$, standardized $\beta = .641$, $p < .001$, 95% CI [.333, .852], $R^2 = .411$.

The model was statistically significant, $F(1,31) = 21.65$, $p < .001$, and explained $R^2 = .411$ of the observed AC variance. PAC demonstrated a positive association with AC: $B = .592$, $SE = .127$, $\beta = .641$, $t = 4.652$, $p < .001$, 95% CI [.333, .852]. The result is therefore consistent with EH2.

The indirect association was calculated as $\beta_1(\text{Model 3B}) \times \beta_2(\text{Model 3C})$ and evaluated using 10,000 non-parametric bootstrap resamples. The indirect effect was .310, with a 95% bootstrap confidence interval [.018, .806]. Because the interval excluded zero, the full-sample evidence is consistent with EH3. The indirect point estimate represented approximately 57.7% of the total IA-AC association; given the small cross-sectional sample, this proportion is treated as descriptive rather than as a precise causal decomposition.

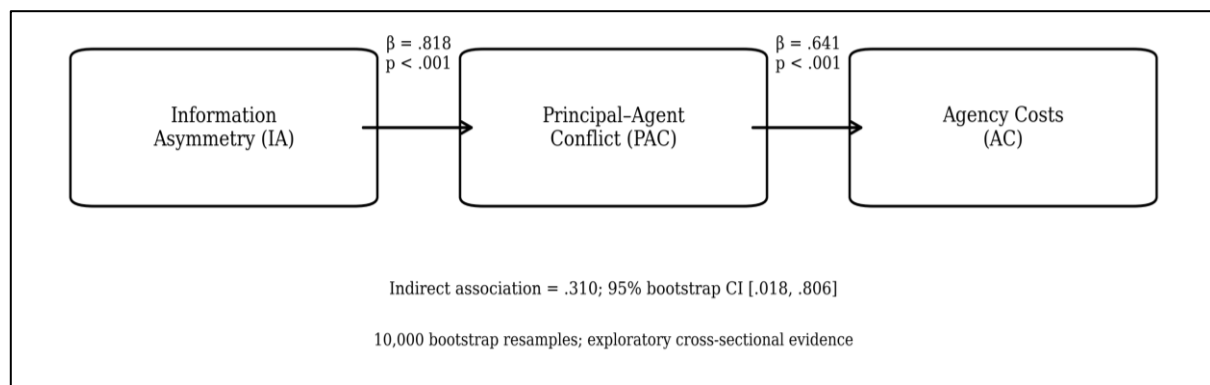


Fig 2 Preliminary Agency-Problem Pathway.

- Note. Standardized direct associations are shown on the arrows. The indirect association was estimated using 10,000 non-parametric bootstrap resamples. The cross-sectional design does not establish temporal causality.

➤ *Governance and Accountability Pathway*

Table 8 Direct Governance Relationships

Hypothesis	Relationship	B	SE	β	p	95% CI	R^2
EH4	IAE -> IA	-.008	.253	-.006	.974	[-.525, .508]	<.001
EH5	IAE -> MA	.293	.122	.397	.022	[-.045, .542]	.157
EH6	BI -> IAE	.437	.152	.458	.007	[-.126, .747]	.210
EH7	BI -> MA	.492	.091	.698	<.001	[-.307, .677]	.487

• *EH4: Internal Audit Effectiveness and Information Asymmetry*

$$IA_i = \beta_0 + \beta_1 IAE_i + \varepsilon_i$$

Expected sign: $\beta_1 < 0$.

- Key Result: $B \approx -.008$, standardized $\beta = -.006$, $p = .974$, 95% CI approximately $[-.525, .508]$, $R^2 < .001$. EH4 was not supported.

EH4 predicted a negative association between IAE and IA. The estimated coefficient was negative in direction but effectively zero: $B = -.008$, $\beta = -.006$, $p = .974$. The model explained virtually none of the observed variance in IA ($R^2 < .001$), and the 95% confidence interval $[-.525, .508]$ crossed zero substantially. The result therefore provides no empirical support for EH4.

• *EH5: Internal Audit Effectiveness and Managerial Accountability*

$$MA_i = \beta_0 + \beta_1 IAE_i + \varepsilon_i$$

Expected sign: $\beta_1 > 0$.

- Key Result: $B = .293$, $SE = .122$, standardized $\beta = .397$, $p = .022$, 95% CI $[.045, .542]$, $R^2 = .157$. The association was less robust under HC3 and eligibility-restricted analyses.

EH5 proposed that IAE would be positively associated with MA. The conventional OLS estimate supported the proposition: $B = .293$, $SE = .122$, $\beta = .397$, $p = .022$, 95% CI $[.045, .542]$, $R^2 = .157$. The corresponding Spearman correlation was also positive ($\rho = .519$, $p = .002$). However, using HC3 heteroscedasticity-robust inference, the coefficient was no longer statistically distinguishable from zero at the 5% level (robust $p = .242$; 95% CI approximately

$[-.199, .785]$). EH5 is therefore described as receiving cautious preliminary support rather than robust confirmation.

• *EH6: Board Independence and Internal Audit Effectiveness*

$$IAE_i = \beta_0 + \beta_1 BI_i + \varepsilon_i$$

Expected sign: $\beta_1 > 0$.

- Key Result: $B = .437$, $SE = .152$, standardized $\beta = .458$, $p = .007$, 95% CI $[.126, .747]$, $R^2 = .210$

EH6 proposed that BI would be positively associated with IAE. The OLS estimate was $B = .437$, $SE = .152$, $\beta = .458$, $p = .007$, 95% CI $[.126, .747]$, $R^2 = .210$. The corresponding Spearman correlation was also positive and statistically significant ($\rho = .524$, $p = .002$). The inference remained significant using HC3 robust standard errors (robust $p = .017$). The available evidence is therefore consistently supportive of EH6.

• *EH7: Board Independence and Managerial Accountability*

$$MA_i = \beta_0 + \beta_1 BI_i + \varepsilon_i$$

Expected sign: $\beta_1 > 0$.

- Key Result: $B = .492$, $SE = .091$, standardized $\beta = .698$, $p < .001$, 95% CI $[.307, .677]$, $R^2 = .487$.

EH7 proposed that BI would be positively associated with MA. This relationship was among the strongest governance findings: $B = .492$, $SE = .091$, $\beta = .698$, $p < .001$, 95% CI $[.307, .677]$, $R^2 = .487$. Spearman's rank correlation similarly indicated a strong positive relationship ($\rho = .635$, $p < .001$). The result also remained significant under HC3 robust inference. EH7 therefore receives the strongest and most robust support within the governance pathway.

➤ *EH8: Moderating Role of Board Independence*

Table 9 Moderated Regression Predicting Managerial Accountability

Predictor	B	p
IAE, centered	.088	.438
BI, centered	.468	<.001
IAE × BI	.073	.545

$$IAE_c = IAE_i - IAE$$

$$BI_c = BI_i - BI$$

$$MA_i = \beta_0 + \beta_1 IAE_c + \beta_2 BI_c + \beta_3 (IAE_c \times BI_c) + \varepsilon_i$$

Interpretation of coefficients: β_1 is the conditional IAE association when centered BI = 0; β_2 is the conditional BI association when centered IAE = 0; β_3 is the interaction coefficient and formal test of moderation.

- Key Result: Estimated slopes: IAEc $B = .088$, $p = .438$; BIC $B = .468$, $p < .001$; interaction $B = .073$, $p = .545$; $R^2 = .501$; ΔR^2 for the interaction $\approx .006$. EH8 was not supported.

EH8 proposed that BI would strengthen the positive relationship between IAE and MA. In the mean-centered moderated regression, the IAE coefficient was .088 ($p = .438$), the BI coefficient was .468 ($p < .001$) and the interaction coefficient was .073 ($p = .545$). The overall model explained $R^2 = .501$, but the interaction accounted for only

approximately $\Delta R^2 = .006$, or 0.6 percentage points of additional explained variation. The interaction also remained non-significant when HC3 robust standard errors were used.

Accordingly, the available evidence provides no support for EH8.

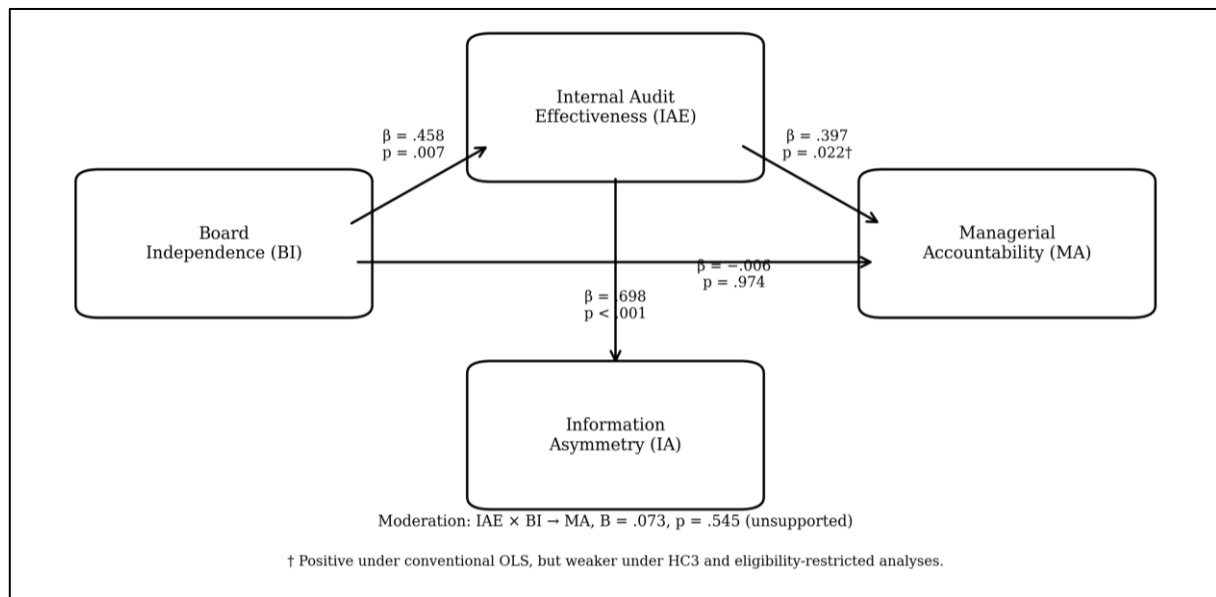


Fig 3 Governance and Accountability Results.

- Note. Standardized coefficients are shown for the principal direct relationships. The IAE-MA association was statistically significant under conventional OLS but

was less robust under HC3 and eligibility-restricted analyses. The $BI \times IAE$ interaction was not statistically significant.

➤ Supplementary Joint Governance Model

Table 10 Joint Regression of Managerial Accountability on BI and IAE

Predictor	B	SE	t	p	95% CI
Board Independence	.461	.103	4.470	<.001	[.250, .671]
Internal Audit Effectiveness	.072	.108	.667	.510	[-.149, .293]

This supplementary model tests whether BI and IAE each retain a unique association with managerial accountability when entered simultaneously.

$$MA_i = \beta_0 + \beta_1 BI_i + \beta_2 IAE_i + \varepsilon_i$$

- Key Result: β_0 estimate = 1.774; BI: $B = .461$, $p < .001$; IAE: $B = .072$, $p = .510$; $R^2 = .494$; adjusted $R^2 = .460$.

Because IAE, BI and MA were mutually related at the bivariate level, a supplementary regression examined whether IAE and BI contributed independently to MA. When both predictors were entered simultaneously, BI remained strongly associated with MA ($B = .461$, $p < .001$), whereas IAE no longer made a statistically distinguishable unique contribution ($B = .072$, $p = .510$). The model explained $R^2 = .494$, adjusted $R^2 = .460$, $F(2,30) = 14.66$, $p < .001$. This finding qualifies the bivariate support for EH5 and suggests that part of the observed IAE-MA relationship may overlap with the broader governance environment represented by BI.

➤ Measurement-Overlap Robustness Test

The BI construct was re-estimated using BCore, a reduced four-item measure that excludes the two indicators

explicitly referring to internal audit. The same direct regression forms were then repeated.

$$IAE_i = \beta_0 + \beta_1 BCore_i + \varepsilon_i$$

- Key Result: $BCore \rightarrow IAE$: $B = .390$, $p = .019$, $R^2 = .165$.

$$MA_i = \beta_0 + \beta_1 BCore_i + \varepsilon_i$$

- Key Result: $BCore \rightarrow MA$: $B = .444$, $p < .001$, $R^2 = .390$.

Two of the six original BI items referred explicitly to internal audit. To determine whether this content overlap mechanically produced the BI-IAE relationship, a reduced four-item BI measure excluding these indicators was constructed. The reduced measure retained acceptable internal consistency ($\alpha = .809$). Using the reduced measure, BI remained associated with IAE ($B = .390$, $p = .019$, $R^2 = .165$) and MA ($B = .444$, $p < .001$, $R^2 = .390$). This reduces concern that EH6 was produced solely by overlapping measurement content.

➤ *Non-Parametric Robustness*

Table 11 Spearman Rank-Order Robustness Results

Relationship	Spearman rho	Approximate significance
IA - PAC	.820	<.001
PAC - AC	.610	<.001
IA - AC	.582	<.001
IAE - IA	-.055	>.05
IAE - MA	.519	.002
BI - IAE	.524	.002
BI - MA	.635	<.001

Because IAE was strongly negatively skewed, the principal bivariate relationships were compared using Spearman rank-order correlations. The rank-based estimates reproduced the substantive pattern observed using Pearson

correlations: IA-PAC $\rho = .820$; PAC-AC $\rho = .610$; IA-AC $\rho = .582$; IAE-IA $\rho = -.055$; IAE-MA $\rho = .519$; BI-IAE $\rho = .524$; and BI-MA $\rho = .635$.

➤ *Eligibility-Based Sensitivity Analysis*

Table 12 Eligibility Sensitivity of Principal Direct Relationships

Relationship	Full sample n=33	Current Nigerian FI n=23	Strict eligible n=20
IA -> PAC	B=.780, $p < .001$, $R^2 = .669$	B=.776, $p < .001$, $R^2 = .781$	B=.763, $p < .001$, $R^2 = .754$
PAC -> AC	B=.592, $p < .001$, $R^2 = .411$	B=.656, $p < .001$, $R^2 = .485$	B=.598, $p = .001$, $R^2 = .438$
IAE -> MA	B=.293, $p = .022$, $R^2 = .157$	B=.228, $p = .080$, $R^2 = .139$	B=.208, $p = .103$, $R^2 = .141$
BI -> IAE	B=.437, $p = .007$, $R^2 = .210$	B=.598, $p = .015$, $R^2 = .249$	B=.622, $p = .030$, $R^2 = .237$
BI -> MA	B=.492, $p < .001$, $R^2 = .487$	B=.473, $p = .001$, $R^2 = .415$	B=.420, $p = .006$, $R^2 = .351$

The main analysis retained all 33 complete observations. In the 23 respondents currently working in Nigerian financial institutions, IA -> PAC remained strong (B = .776, $p < .001$, $R^2 = .781$), PAC -> AC remained strong (B = .656, $p < .001$, $R^2 = .485$), BI -> IAE remained positive (B = .598, $p = .015$, $R^2 = .249$), and BI -> MA remained positive (B = .473, $p = .001$, $R^2 = .415$). IAE -> MA remained positive but was not significant at .05 (B = .228, $p = .080$).

In the strict 20-person sample, IA -> PAC remained strong (B = .763, $p < .001$, $R^2 = .754$), PAC -> AC remained positive (B = .598, $p = .001$, $R^2 = .438$), BI -> IAE remained

positive (B = .622, $p = .030$, $R^2 = .237$), and BI -> MA remained positive (B = .420, $p = .006$, $R^2 = .351$). IAE -> MA remained positive but was not significant (B = .208, $p = .103$).

The mediation result also weakened as eligibility became more restrictive. In the 23-person current-financial-institution subsample, the indirect association remained positive with a bootstrap interval only marginally above zero; in the strict 20-person sample, the bootstrap interval included zero. This sensitivity analysis indicates that the IA -> PAC -> AC mediation finding is promising but not yet stable enough to be treated as confirmatory evidence.

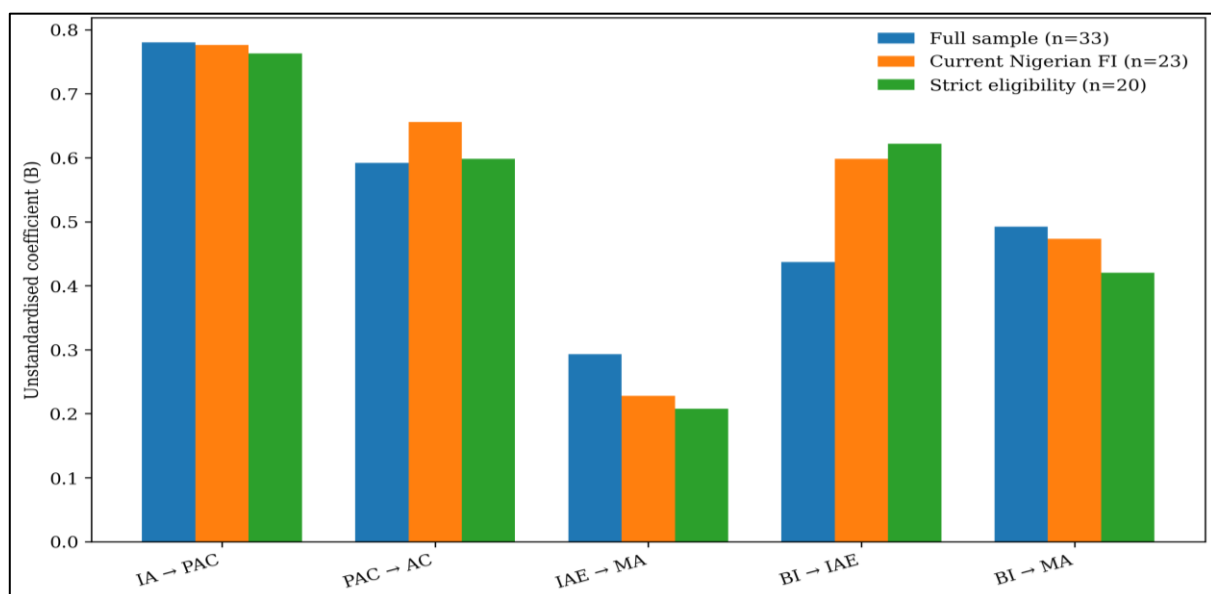


Fig 4 Eligibility Sensitivity of Key Regression Coefficients.

- Note. Unstandardized coefficients are compared across the full sample (n = 33), respondents currently working in Nigerian financial institutions (n = 23), and respondents satisfying all three original screening conditions (n = 20).

➤ *Summary of Exploratory Hypothesis Results*

Table 13 Summary of Exploratory Hypothesis Tests

Hypothesis	Proposed relationship	Principal finding	Interpretation
EH1	IA -> PAC (+)	B=.780, β =.818, $p<.001$	Supported
EH2	PAC -> AC (+)	B=.592, β =.641, $p<.001$	Supported
EH3	IA -> PAC -> AC	Indirect=.310; 95% boot CI [.018,.806]	Preliminarily supported
EH4	IAE -> IA (-)	B=-.008, β =-.006, $p=.974$	Not supported
EH5	IAE -> MA (+)	B=.293, β =.397, $p=.022$; robustness weaker	Cautious preliminary support
EH6	BI -> IAE (+)	B=.437, β =.458, $p=.007$; robust checks	Supported
EH7	BI -> MA (+)	B=.492, β =.698, $p<.001$; robust checks	Strongly supported
EH8	BI moderates IAE -> MA	Interaction B=.073, $p=.545$	Not supported

The most consistent findings are IA -> PAC, PAC -> AC, BI -> IAE and BI -> MA. The IA -> PAC -> AC indirect association receives preliminary support in the full sample but becomes uncertain under the strictest eligibility restriction. The IAE -> MA relationship is positive but comparatively sensitive to the method used for inference and to sample restrictions. The expected IAE -> IA relationship is essentially absent, while no evidence is found that BI moderates IAE -> MA.

➤ *Overall Empirical Pattern*

Taken together, the results reveal two related but distinguishable empirical structures. The first concerns the agency problem: Information Asymmetry -> Principal-Agent Conflict -> Agency Costs. The second concerns the governance environment: Board Independence was positively associated with both Internal Audit Effectiveness and Managerial Accountability. Internal Audit Effectiveness was also positively related to Managerial Accountability at the bivariate level, although this relationship weakened under robust inference, restricted eligibility samples and simultaneous control for BI.

The empirical evidence therefore does not support a simple model in which higher perceived IAE automatically corresponds with lower levels of every agency problem. Instead, the strongest governance result concerns the role of Board Independence, while the strongest agency result concerns the role of Information Asymmetry.

V. DISCUSSIONS AND CONCLUSION

➤ *Overview of the Findings*

This study provides a preliminary empirical extension of Agency Theory by examining relationships among Information Asymmetry (IA), Principal-Agent Conflict (PAC), Agency Costs (AC), Internal Audit Effectiveness (IAE), Managerial Accountability (MA) and Board Independence (BI). Rather than treating these constructs as interchangeable manifestations of corporate governance quality, the study distinguishes between the formation and consequences of the agency problem and the governance mechanisms intended to constrain it.

The findings reveal a differentiated empirical pattern. Within the agency-problem pathway, IA was strongly positively associated with PAC, PAC was positively associated with AC, and the full-sample bootstrap analysis produced preliminary evidence of an indirect IA-AC association through PAC. Within the governance pathway, BI was positively associated with both IAE and MA. IAE was also positively associated with MA under conventional bivariate analysis, although that relationship became considerably less stable under robust inference, stricter respondent-eligibility criteria and simultaneous control for BI. By contrast, IAE was essentially unrelated to IA, and BI did not significantly moderate the IAE-MA relationship.

These findings provide partial rather than uniform support for the broader conceptual position advanced by Ajaegbu and Mmayie (2025). Their framework identifies information asymmetry, monitoring costs and accountability as central mechanisms through which internal audit may mitigate agency problems, while also recognizing that management override, resource constraints and weak board oversight may impair the governance contribution of internal audit.

➤ *Information Asymmetry as an Antecedent of Principal-Agent Conflict*

The strongest association observed in the study was between IA and PAC. Information Asymmetry was positively associated with Principal-Agent Conflict with a standardized coefficient of $\beta = .818$, and IA alone accounted for approximately 66.9% of the observed variation in PAC in the full sample.

This finding is strongly consistent with the informational foundations of Agency Theory. Jensen and Meckling (1976) locate agency costs within the separation of ownership and control, while Eisenhardt (1989) identifies information systems, observability, incentives and risk as central elements of the agency problem. Where principals cannot adequately observe agent behavior or independently verify management representations, determining whether managerial choices correspond with principal interests becomes more difficult.

The result also supports Ajaegbu and Mmayie's (2025) argument that agents' superior organizational information can intensify principal-agent problems because principals cannot fully observe or verify managerial conduct. Importantly, the result does not imply that information asymmetry is inherently evidence of managerial misconduct. The governance concern arises where this informational advantage limits principals' capacity to assess managerial decisions independently.

The implication is that reducing principal-agent problems may require attention not merely to managerial incentives but also to the architecture through which organizational information reaches those charged with governance.

➤ *Principal-Agent Conflict and Agency Costs*

Principal-Agent Conflict was positively associated with Agency Costs ($\beta = .641$, $p < .001$), accounting for approximately 41.1% of observed AC variance. This relationship is consistent with Jensen and Meckling's (1976) conceptualization of agency costs as monitoring expenditure, bonding expenditure and residual loss arising because the interests of principals and agents cannot be aligned without cost.

The present results support the value of distinguishing those costs from the underlying conflict that makes monitoring and corrective intervention necessary. Treating AC as conceptually prior to PAC risks conflating the underlying agency conflict with its economic and organizational consequences. The present ordering instead suggests Information Asymmetry $\rightarrow$ Principal-Agent Conflict $\rightarrow$ Agency Costs.

➤ *The Indirect IA-PAC-AC Relationship*

EH3 examined whether PAC statistically accounted for part of the association between IA and AC. The estimated indirect association was .310, with a 95% bootstrap confidence interval [.018, .806] in the full sample. This provides preliminary support for the proposed IA $\rightarrow$ PAC $\rightarrow$ AC sequence.

The finding should nevertheless be interpreted conservatively because the variables were measured contemporaneously, the path from PAC to AC after controlling for IA did not individually reach the conventional .05 level, and the indirect association became less stable in the strict 20-person eligibility sample. The defensible conclusion is therefore that the full-sample pattern is consistent with an indirect association in which PAC accounts for part of the relationship between IA and AC, not that causal mediation has been established.

➤ *Internal Audit Effectiveness and Information Asymmetry: A Theoretically Important Null Result*

Perhaps the most theoretically revealing result is the absence of an association between IAE and IA. The conceptual expectation was straightforward: if internal audit provides boards with independent assurance, verifies management representations and operates as an informational

bridge, stronger internal audit effectiveness should be associated with lower information asymmetry. Ajaegbu and Mmayie (2025) explicitly identify reduction of information asymmetry as one of the principal mechanisms through which internal audit may mitigate agency problems.

Related literature provides reasons for expecting an informational contribution. Bardhan et al. (2023) find that firms with higher-quality internal audit functions issue management forecasts that are more accurate and precise. Kaawaase et al. (2021) report an association between internal audit quality and financial reporting quality in Ugandan financial institutions. Sun et al. (2025) also report evidence that internal audit quality can influence corporate outcomes through information-quality and agency-cost channels.

Yet the present study found an IAE-IA coefficient of approximately zero ($\beta = -.006$, $p = .974$). This result may expose an important distinction between effective internal auditing and elimination of management's structural informational advantage. A function can be professionally competent, appropriately planned, evidence-based and effective in communicating findings without eliminating the fact that management knows more about daily operations than the board.

The result therefore suggests a potentially important distinction for future theory: technical or functional internal audit effectiveness may not be identical to agency-governance effectiveness. The former concerns how well internal audit performs its professional responsibilities; the latter concerns whether that performance actually changes the information, accountability and behavioral conditions underlying the principal-agent relationship.

➤ *Internal Audit Effectiveness and Managerial Accountability*

The IAE-MA relationship presents a more nuanced picture. Under conventional OLS analysis, IAE was positively associated with MA ($\beta = .397$, $p = .022$), and the corresponding Spearman correlation was also positive. These findings are consistent with the proposition that effective internal audit is associated with stronger managerial answerability.

However, the coefficient lost conventional significance using HC3 robust standard errors, remained positive but non-significant in both eligibility-restricted analyses, and became small and non-significant when BI and IAE were entered simultaneously. The paper should therefore not conclude that IAE independently determines MA. A more defensible interpretation is that greater perceived internal audit effectiveness tends to coexist with stronger managerial accountability, but part of this association appears to overlap with the broader governance environment in which internal audit operates.

➤ *Board Independence and Internal Audit Effectiveness*

The relationship between BI and IAE was comparatively robust. Board Independence was positively associated with Internal Audit Effectiveness ($\beta = .458$, $p =$

.007) and remained positive under Spearman correlation, HC3 robust inference, restricted eligibility samples and an alternative BI measure excluding internal-audit-specific items.

This evidence supports the proposition that internal audit effectiveness should not be conceptualized solely as a characteristic of auditors themselves. The IIA's Global Internal Audit Standards position board authorization, independent organizational positioning and board oversight as central principles of effective internal auditing. Vadasi et al. (2021) similarly show that audit committee characteristics are associated with internal audit professionalization.

The Nigerian context makes this finding particularly relevant. Ashiru et al. (2024) show that the practical independence and reliability of audit committees may be affected by institutional conditions. The present findings therefore support a governance-embedded view of internal audit: effectiveness is partly enabled by governance arrangements that give internal audit authority, access and protection from inappropriate influence.

➤ *Board Independence and Managerial Accountability*

The BI-MA relationship was the strongest and most stable result within the governance pathway. Board Independence was strongly positively associated with Managerial Accountability ($\beta = .698$, $p < .001$) and remained robust across rank-based analysis, HC3 inference, the reduced BI measure and both eligibility-restricted samples.

The result is consistent with the monitoring function assigned to boards within Agency Theory and with OECD guidance that boards should monitor management, exercise objective and independent judgement and establish clear lines of accountability. The particularly strong BI-MA relationship also helps explain why IAE lost significance in the joint governance model: independent boards may both support effective internal audit and hold management accountable through multiple governance mechanisms.

➤ *Why Board Independence Did Not Moderate the IAE-Accountability Relationship*

EH8 proposed that BI would strengthen the positive relationship between IAE and MA. The interaction coefficient was small and non-significant, and inclusion of the interaction increased explained variance by only approximately 0.6 percentage points. The absence of moderation suggests that BI may operate less as an amplifier of internal audit effectiveness and more as an important governance mechanism in its own right.

This supports a simpler governance structure in the present data: BI $\rightarrow$ IAE and BI $\rightarrow$ MA, rather than necessarily BI $\times$ IAE $\rightarrow$ MA. With only 33 observations, however, the study has limited power to detect interaction effects. EH8 should therefore be described as unsupported in the present sample, rather than as evidence that moderation cannot exist in the wider population.

➤ *An Emerging Two-Process Interpretation of Agency Governance*

Taken together, the findings suggest two related but analytically distinct processes. The first is the agency problem process: Information Asymmetry $\rightarrow$ Principal-Agent Conflict $\rightarrow$ Agency Costs. The second is the governance-response process, within which Board Independence is associated with both Internal Audit Effectiveness and Managerial Accountability, with a more tentative positive association between IAE and MA.

This interpretation differs from a model in which internal audit effectiveness is assumed to be the direct origin of reductions in every agency variable. Agency Theory explains why governance is required: delegated authority, incomplete information and divergent interests create monitoring difficulties and agency costs. Internal audit and independent boards belong to the governance response to those conditions; they should not necessarily be expected to erase the underlying structural characteristics of delegation.

➤ *Theoretical Contributions*

The study makes four principal theoretical contributions. First, it separates information asymmetry, principal-agent conflict and agency costs empirically and conceptually. Second, it develops PAC as a possible intervening construct between information asymmetry and agency costs. Third, it advances a governance-embedded conceptualization of internal audit effectiveness. Fourth, the null IAE-IA result suggests a potentially valuable distinction between functional internal audit effectiveness and agency-governance effectiveness.

➤ *Practical and Governance Implications*

For boards and audit committees, the strong IA-PAC relationship suggests that information architecture itself is a governance issue. Effective oversight depends not merely on receiving reports but on determining whether information is timely, sufficiently complete and independently challenging. The BI results suggest that direct access between the chief audit executive and the board, protection from inappropriate management interference, adequate authority and meaningful follow-up of significant findings are part of the governance conditions within which internal audit can function effectively.

For internal audit functions, the absence of an IAE-IA relationship raises an important performance question. Internal audit effectiveness should not be evaluated exclusively through audit-plan completion, number of reports, finding closure or methodological quality. A broader governance-oriented assessment could ask whether internal audit improves the reliability of information reaching the board, identifies information that would otherwise remain unavailable, strengthens management answerability and contributes to informed governance decisions.

For regulators and governance standard-setters, the findings reinforce the distinction between formal governance structures and substantive governance behavior. Regulatory assessment may therefore benefit from considering how

governance mechanisms function in practice rather than focusing exclusively on structural compliance.

➤ Limitations

The findings should be interpreted within clear methodological boundaries. The most important limitation is the small sample of 33 respondents. The sampling approach is non-probabilistic, approximately 70% of respondents were internal audit professionals, and the primary sample includes ten respondents who did not report currently working in Nigerian financial institutions. All substantive constructs were measured through a single cross-sectional questionnaire, so common-method variance cannot be excluded, and temporal ordering cannot be established.

The study also could not undertake defensible factor-analytic validation because the number of observations was insufficient relative to the 38 measurement indicators. The strong IA-PAC correlation makes future discriminant-validity assessment particularly important. IAE displayed substantial negative skews and concentration towards the upper end of the scale. Finally, the eight-hypothesis framework was refined after preliminary examination of the data and therefore represents an exploratory re-specification rather than an independent confirmatory test.

➤ Directions for Future Research

The strongest next step is to prospectively test the refined framework using a new and substantially larger sample. A future study should specify the IA → PAC → AC pathway before data collection and determine sample requirements through a priori power or precision analysis. A larger sample would permit formal evaluation of the measurement model, including convergent and discriminant validity, before testing structural relationships.

The respondent pool should also be more occupationally balanced and, ideally, include multiple respondents from the same organization. Future measurements should distinguish between internal audit functional effectiveness and internal audit agency governance effectiveness. Objective organizational indicators such as internal audit resources, private chief-audit-executive meetings with the audit committee, age of unresolved findings, repeat findings, action-closure rates, control failures and regulatory breaches could supplement perceptual measures.

Longitudinal data would be particularly valuable for testing whether changes in IA precede changes in PAC and whether changes in PAC subsequently predict agency-related costs. The distinction between formal and substantive BI should also be investigated further in emerging-market settings.

➤ Conclusion

This study provides a preliminary empirical extension of Agency Theory and of Ajaegbu and Mmayie's (2025) conceptual positioning of internal audit as an agency-governance mechanism. The evidence does not support a simple conclusion that stronger internal audit effectiveness

automatically reduces all dimensions of the principal-agent problem. Instead, the results reveal a more differentiated structure.

On the agency side, Information Asymmetry was strongly associated with Principal-Agent Conflict, and Principal-Agent Conflict was strongly associated with Agency Costs. The full-sample bootstrap analysis additionally provided preliminary evidence of an indirect association from IA to AC through PAC.

➤ Information Asymmetry → Principal-Agent Conflict → Agency Costs

On the governance side, Board Independence emerged as particularly important. BI was positively associated with both IAE and MA, and these relationships remained comparatively stable across several robustness and eligibility checks. The association between IAE and MA was positive but less stable, while the hypothesized IAE-IA relationship was essentially absent. BI also did not significantly moderate the IAE-MA relationship.

The resulting interpretation is that agency-problem formation and governance response are related but analytically distinct processes. Internal audit belongs to the governance response. Its role is potentially important, particularly for assurance and accountability, but it operates within a wider institutional architecture. The effectiveness of that architecture appears closely related to substantive board independence.

The principal contribution of the study can therefore be summarized as follows: information asymmetry appears closely associated with the conditions under which principal-agent conflict emerges, while agency costs appear closely associated with the consequences of that conflict. Internal audit forms part of the governance response to these problems, but its effectiveness should be understood within a wider governance architecture in which board independence plays an important role. Given the exploratory design, this proposition should now be treated as the basis for prospective confirmatory testing, not as the final word on the relationship.

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