

Internal Audit Function Resources, Readiness and Implementation of Risk Based Internal Audit

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Abstract

Risk based internal audit (RBIA) is a crucial approach to enhance effectiveness of internal audit function (IAF). However, its implementation is limited especially in public sector of developing countries including Tanzania. Based on Organizational Readiness Theory (ORT) and Resource Based View (RBV), this study examined the relationship between internal audit function IAF resources (competence, size) and the implementation of risk based internal audit (RBIA), and the mediation role of internal audit readiness in Tanzanian Public and Statutory Corporations (PSCs). The study used Partial Least Squares-Structural Equation Modelling (PLS-SEM) to analyse cross-sectional survey data collected from chief internal auditors of 174 PSCs. The results indicate that IAF competence ($\beta=0.303$, $p=0.000$) and readiness ($\beta=0.582$, $p=0.000$) are positively related to RBIA implementation. No significant relationship found between IAF size and RBIA implementation ($\beta=0.003$, $p=0.941$). Furthermore, while IAF readiness partially mediates the relationship between IAF competence and RBIA implementation in a complimentary manner ($\beta = 0.311$, $p=0.000$), no mediation effect exists regarding IAF size ($\beta=0.011$, $p=0.780$). The model demonstrates predictive relevance ($Q^2 = 0.462$) and strong explanatory power ($R^2 = 61.7\%$). The study extends prior RBIA research by integrating ORT and RBV to explain how the combination of IAF resources and readiness leads to RBIA implementation. It also adds to scanty RBIA literature in public sector especially PSCs. The findings suggest prioritization of IAF readiness for successful RBIA implementation. Future research should consider including other factors such as IAF organizational culture, management and audit committee support which are important internal audit resources as suggested by Resource -Based View.

Keywords: Risk-Based Internal Audit, Organizational Readiness Theory, Public Statutory Corporations, Tanzania

Introduction

Risk Based Internal Auditing (RBIA) has emerged as a critical approach for improving the effectiveness of organizational risk management, governance and internal controls in public and private sectors (IIA,2024). Its development is largely attributed to the limitations of traditional internal audit approaches that failed to align internal audit priorities to organizational objectives and risks (Lois, 2020; Abidin,2017). RBIA is a systematic, comprehensive and forward-looking approach that aligns the priorities of the IAF with risk management (IPPF,2017). By directing audit efforts toward areas with a significant impact on organizational goals, RBIA evaluates the

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effectiveness of risk assessment processes and the response measures implemented by management. Consequently, RBIA contributes to improved organizational performance and decision-making. Despite these benefits, RBIA implementation remains low in the public sectors of developing countries (PWC, 2023; Maisyarah & Wahyu, 2025; Mujalli, 2024). Exploring the factors that influence its implementation is therefore crucial. The transition from compliance-based auditing to RBIA in the public sector is not without challenges. Notable among these are inadequate resources specifically regarding IAF competence and size (Maisyarah & Wahyu, 2025; Ali, 2016) and a lack of readiness (Kaveri, 2012). Previous studies on IAF resources and RBIA implementation are scarce, particularly in the public sector (Chang et al., 2019; Mujalli, 2024) and produced inconsistent results. For example, while several studies reported significant positive relationship (Chalu et al., 2025; Chang et al., 2019; Mujalli, 2024; Saleem et al., 2019), others found no such relationship (Ardianingsih et al., 2024; Abidin, 2017; Iskandar et al., 2018). These inconsistencies may be partly attributed to different dimensions used. While some scholars measured implementation solely as inclusion of risk assessment processes in audit planning (Koutoupis & Tsamis, 2009; Castanheira et al., 2010; Ayagre, 2014) or execution (Coetzee & Lubbe, 2014; Sani & Abubakar, 2020), others utilized a comprehensive measure including planning, execution and reporting (Abidin, 2017). Such variations prevent researchers and practitioners from identifying critical factors for success. This inconclusiveness suggests a need for an additional variable to explain the mechanism through which IAF resources relate to RBIA implementation.

Furthermore, previous studies focused on IAF resources without considering IAF readiness. Although readiness is overlooked in RBIA literature, change management scholars assert that it is critical for any effective change implementation (Abdul-Nasiru, 2024; Weiner, 2009). Readiness encompasses the belief held by change agents in the relevance of the change and their perceived capability to implement it (Weiner, 2009). Empirical studies in project management (Santos et al., 2024), education (Sudhartio et al., 2023), and health (Santhidran & Chandran, 2013) support the mediating role of readiness. Including IAF readiness provides new understanding into the relationship between IAF resources and RBIA implementation. Additionally, none of the studies that examined IAF resources and RBIA implementation in the public sector specifically focused on Public and Statutory Corporations (PSCs). PSCs are significantly more complex than other public sector entities because they pursue a combination of commercial, social welfare and socio-political goals (Andre, 2010). They also operate in key strategic sectors such as energy, utilities, aviation, ports, tertiary education, health and telecommunications (Khasiani et al., 2023). Despite their importance, PSCs are often characterized by operational ineffectiveness and inefficiencies resulting from poor corporate governance and ineffective risk management (Imbert et al., 2020; Molokwane et al., 2024). In Tanzania, the Controller and Auditor General reports for the financial years 2022/2023 and 2023/2024 consistently highlight critical weaknesses in PSCs, including expenditure abnormalities, procurement fraud and misuse of office. These inefficiencies persist despite the formal adoption of RBIA in 2013, suggesting that mere adoption does not yield the expected results if it is not properly implemented. It is therefore essential to investigate RBIA implementation within Tanzanian PSCs. Furthermore, empirical studies of internal audit in African PSCs including Tanzania, are mainly centred on the outcome of RBIA implementation on governance and performance (Njenga & Warui, 2023) and IAF effectiveness (Bananuka et al., 2018; Musah et al., 2018; Njeza et al., 2023).

To address the identified research gap, this study utilizes the theoretical lenses of the Organizational Readiness Theory (ORT) and Resource Based View (RBV) to investigate the link between IAF resources, readiness and RBIA implementation in Tanzanian PSCs. Recognizing the lack of consensus on measurement and the multidimensional nature of RBIA, this study defines RBIA implementation as incorporation of risk assessment in planning, execution and reporting of audit work as advocated by Abidin (2017). However, unlike Abidin (2017) who measured RBIA implementation as a lower-order variable, this study treats RBIA implementation as a second-order variable. This approach allows consolidation of various measures identified in previous literature to ensure construct validity and a more robust assessment of RBIA implementation. This study offers several contributions to the existing literature on RBIA implementation. First, it highlights the mediation effect of IAF readiness in the connection between IAF resources and RBIA implementation. Previous studies such as those of Mujalli (2024) and Abidin (2017), examined the direct influence of IAF resources without considering the mediating role of readiness. Second, the study makes a theoretical contribution by using a dual framework, providing justification for why resources alone may not translate into successful implementation. While most previous studies such as Lois et al., (2020); Abidin, (2017); Almgrashi & Mujalli, (2024) relied on Agency Theory, its perspective alone may be insufficient for investigating RBIA implementation (Mihret et al., 2010).

Third, the study employs a comprehensive definition of RBIA implementation covering planning, execution and reporting. This differs from the work of Chang et al. (2019), Saleem et al. (2019), and Ayagre (2014) who focused only on planning, or Coetzee&Lubbe (2014) and Sani&Abubakar (2020), who focused only on execution. By measuring RBIA implementation as a second-order variable, the study recognizes its multidimensional nature and improves construct validity. Finally, the study adds to scant literature on RBIA implementation in public sector, specifically PSCs. While previous studies centred on local governments or state departments, this study provides empirical evidence on IAF resources, readiness and RBIA implementation in PSCs. The knowledge is vital for internal audit practitioners and policymakers such as the Internal Auditor General (IAG). The remainder of the paper is organized as follows: the next section presents the literature review and study hypotheses. Subsequent sections present the methodology, study findings and its discussion, practical implications and recommendations for future studies.

Literature Review

Theoretical Review and Hypothesis Development

This study is grounded in the Organizational Readiness Theory (ORT) and is complemented by Resource-Based View (RBV) to provide a framework to understand existence of internal audit resources and their support to RBIA implementation. ORT(Weiner,2009) holds that successful change implementation hinges on readiness state of change agents which is reflected in their collective commitment and confidence in their abilities to implement it. Accordingly, this study considers RBIA implementation as a fundamental change from compliance to risk-focused auditing approach that involves a shift in the audit practice and internal auditors' mindset. The theory is used to support the argument that RBIA can be successfully implemented if internal auditors within IAF collectively committed and believe in their capabilities to do risk assessment in all phases of audit cycle. While ORT is widely applied in healthcare (Shea et al., 2014), technology adoption (Halpern et al., 2021), and education (Rikala & Hiltunen, 2014), no study has yet used it to investigate RBIA implementation.

RBV compliments ORT by providing rationale for IAF resources, that is, IAF competence and size. RBV is grounded in the argument that internal resources and capabilities directly influence organizational performance (Peteraf & Barney, 2003). The theory posits that performance disparities among organizations are attributed to differences in the unique resources they control (Peteraf & Barney, 2003). According to RBV, these resources are strengths that enable organizations to fulfil their missions and strategies, thereby achieving superior performance. The theory identifies various tangible and intangible resources such as competent workforce, technology, information, knowledge, and management support, as key drivers of performance. Unlike tangible assets, intangible assets cannot be easily duplicated by competitors and thus hold significant potential to influence organizational outcomes (Ahmad, 2015). In the context of internal auditing, human resources in terms of IAF competence and IAF size are considered a critical resources for its effectiveness (Ahmad, 2015). These resources reflect the availability of sufficient skills, knowledge and capabilities to support increased audit coverage as a result of RBIA implementation. RBV has been widely applied in strategic management to investigate the determinants of organizational performance (Newbert, 2007). However, the theory itself does not provide a specific mechanism for how these resources are activated in change implementation context. This limitation is addressed by ORT. Based on ORT and RBV, the study assumes that IAF resources enhance IAF readiness which in turn facilitates RBIA implementation. IAF competence and size reflect the capacity to implement RBIA while IAF readiness determines utilization of this capacity.

Internal Audit Function Competence and RBIA Implementation

IAF competence is the cornerstone of effectiveness of internal auditing (Chang et al., 2019; Oussii & Taktak, 2018). Internal audit functions require knowledgeable and skilled staff to navigate changing business risks caused by a volatile environment. Accordingly, IIA Standard 3.1 requires internal auditors to possess the knowledge, skills and other competencies relevant for effective execution of audit work (IIA, 2024). Previous studies found significant positive relationship between IAF competence on RBIA implementation (Mujalli, 2024; Lois et al., 2020; Yunus et al., 2019). For example, Mujalli (2024) investigated the determinants of RBIA implementation in Saudi Arabia government agencies using PLS-SEM and found that risk management training positively influenced implementation. These findings align with those of Maisyarah & Wahyu (2025) in Indonesian local governments and Lois et al. (2020) in Greece. Lois et al. (2020) argued that risk management training equips internal auditors with the knowledge to assess risks accurately and link them to organizational objectives. Furthermore, such training enables auditors to confidently assume roles in risk management. However, some empirical studies such as those by Ardianingsih et al. (2024) and Abidin (2017), found that IAF competence does not influence RBIA implementation. They found that knowledge, skills and experience had no relationship with RBIA implementation. Despite these inconsistencies, experience, knowledge and skills of internal auditors remain theoretically vital for assessing business risk management and evaluating management's responses. Consequently, this study hypothesizes that:

H1: Internal audit competence is positively related to RBIA implementation

Internal Audit Function Size and RBIA Implementation

The number of internal auditors, reflecting the IAF size has been found to positively related to IAF performance (Grima et al., 2023; Chang et al., 2019). An IAF with a sufficient number of

auditors improves audit coverage and allows for the rotation of staff, resulting in more effective and objective audits (Alzeban, 2018; Arena et al., 2009). Regarding RBIA implementation, studies by Coetzee&Lubbe (2014) and Selim& McNamee (1999) also indicate a positive effect of IAF size. These scholars argued that a large IAF provides a diverse talent pool, which is particularly important for RBIA as it requires the coverage of all risky areas, including both financial and non-financial risks. However, Abidin (2017) found that IAF size did not significantly affect RBIA implementation in Malaysian listed companies. A large IAF with sufficient personnel is essential to ensure comprehensive audit coverage of an auditee's risky areas. Therefore, this study predicts that:

H2: Internal audit function size is positively related to RBIA implementation.

Analysis of the literature suggests that inconsistent results may be partly attributed to operationalization of RBIA implementation. Studies that measured RBIA implementation solely in terms of risk assessment during the planning or execution stage (Coetzee & Lubbe, 2014; Lois et al., 2020; Maisyarah & Wahyu, 2025) generally found a significant positive relationship with IAF competence and size. Conversely, Abidin (2017), who defined RBIA implementation across the full audit cycle found insignificant results. A possible explanation is that IAF competence and size influence each stage of the audit differently, that is, their impact may be high during the planning but lower during reporting. To address this, the study measures RBIA implementation as a second-order construct incorporating planning, execution and reporting as lower-order variables to better assess their individual and combined influence.

Internal Audit Function Readiness and RBIA Implementation

This study argues that RBIA implementation is also related to IAF readiness. IAF readiness is defined as collective belief among internal auditors that RBIA is beneficial and shared confidence in their ability to implement it. Although there is no empirical study on the relationship between readiness and RBIA implementation, previous studies across various disciplines indicate that readiness is positively related to change implementation. These include digital transformation (Halpern et al., 2021; Lokuge et al.,2018), education (Masry-Herzalah & Dor-Haim , 2022) and healthcare (Shea et al., 2014).. In the auditing field, readiness is considered a critical factor for implementing professional changes such as the adoption of auditing standards and new audit techniques (Ismail et al., 2024; Seethamraju & Hecimovic, 2023). For example,Alzeban, (2018) concluded that IAF readiness has a significant positive effect in the adoption of accounting standards in Saudi Arabia. Drawing from prior empirical studies and organizational readiness theory, this study predicts a positive influence of the IAF readiness on RBIA implementation, hence, the following hypothesis:

H3: Internal audit function readiness is positively related to RBIA implementation.

The Mediation Effect of Internal Audit Function Readiness

Research consistently indicates a relationship between IAF resources and RBIA implementation. While previous studies such as Mujalli (2024), Jaber et al. (2024) and Lois et al. (2020) found a positive relationship between resources and RBIA implementation, others found no such effect (Abidin, 2017; Iskandar, 2018; Ta & Doan, 2022). These inconclusive results may stem from an indirect relationship between resources and RBIA implementation as suggested by ORT. Readiness is therefore the link that enables organizations to use their resources effectively to drive change

(Armenakis et al., 1993). Studies also indicate positive effect of IAF resources and readiness on various changes in internal audit field. Specifically, Ismail et al. (2024) found that IAF resources have a positive effect on readiness to implement new auditing frameworks. The results are supported by Saengsith and Suntraruk (2022) who found that competence has positive relationship with IAF readiness to adopt digital auditing. Furthermore, empirical studies in other areas, such as project management (Santos et al., 2024), education (Sudhartio et al., 2023) and healthcare (Santhidran & Chandran, 2013) support the mediation role of readiness. Based on ORT and empirical studies, this study argues that IAF resources influence IAF readiness, which in turn affects RBIA implementation. Therefore, the study hypothesizes that:

H4a: Internal audit function readiness positively mediates the relationship between internal audit function competence and RBIA implementation.

H4b: Internal audit function readiness positively mediates the relationship between internal audit function size and RBIA implementation.

Figure 1 below presents the hypothesized relationship between IAF resources (competence and size), IAF readiness and RBIA implementation. IAF resources represent independent variable, IAF readiness serves as the mediator and RBIA implementation is the dependent variable.

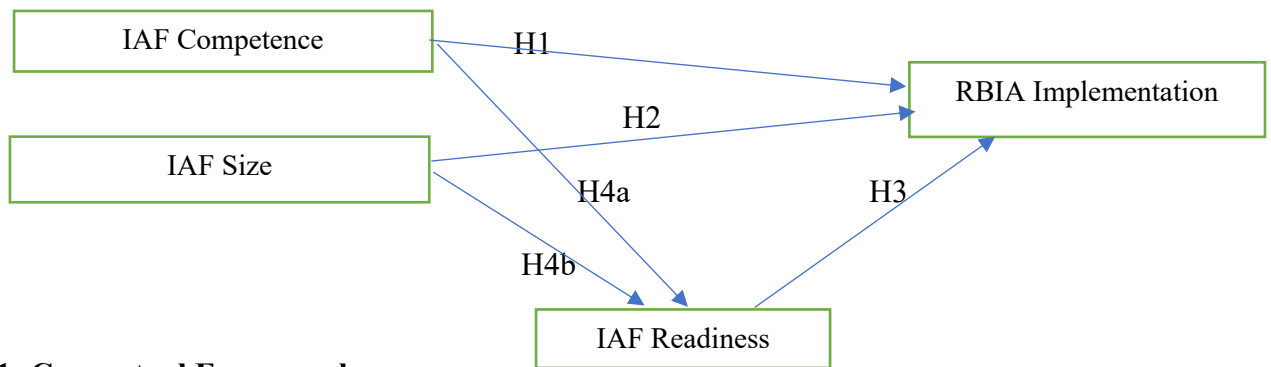


Figure 1: Conceptual Framework

Methodology

Population, Sampling and Data Collection

The study used questionnaires to collect data from Tanzanian PSCs from May 2023 to March 2024. The population of the study consisted of 254 PSCs (URT, 2023). A sample of 155 PSCs was determined using the Krejcie and Morgan (1970) table. In addition, the study included a 20% buffer to account for potential non-responses, as advocated by Hansen et al. (2018). Therefore, the final targeted sample size was 186 PSCs. To ensure a representative sample, the population was classified into 13 sectors based on the International Standard Industrial Classification of All Economic Activities (ISIC). Proportional allocation and random sampling were applied to obtain the specific number of PSCs to be included from each sector. Table 1 presents the population and the number of sampled PSCs for each sector.

Table 1: Sample size classification by sector

Sector	Population	Number of PSCs sampled	Number of PSCs that responded	Percentage (%)
Utilities	64	47	45	25.2
Mining, Quarrying and Oil and Gas Extraction	9	7	5	3.5
Real Estate, Rental and Leasing	3	2	2	1.1
Health Care and Social Assistance including Social Security Fund	19	14	12	7.5
Professional, Scientific and Technical Services	39	29	27	15.4
Finance, Banking and Insurance	9	7	6	3.5
Manufacturing	2	1	1	0.7
Telecommunication/Broadcasting and Publishing	5	4	3	2.0
Agriculture, Forestry, Fishing and Hunting	24	18	16	9.4
Construction	6	4	4	2.
Arts, Entertainment and Recreation	8	6	6	3.0
Transport and warehousing	14	10	10	5.0
Education	52	38	37	21.0
Total	254	186	174	100

Data were collected through a cross-sectional survey of 186 chief internal auditors from the sampled PSCs. Chief internal auditors were targeted because they are responsible for the performance of internal audit units. As heads of these units, they ensure that the function is well-resourced with the required competencies, assess the performance of all internal auditors, and develop RBIA plans. The survey questionnaires were distributed and collected both physically (via the “drop and pick” method) and electronically using Kobo toolbox. The questions were adapted from previous studies., and the instrument was pilot-tested prior to data collection, as recommended by Creswell and Creswell (2023). A total of 179 useful questionnaires were collected (a 93.5% response rate). The data cleaning process ended with responses from 174 PSCs useful for further analysis. The sample support generalization of findings as it reflects the population’s sector distribution. Furthermore, the results of Mann–Whitney U test indicated that non-response bias may not affect the findings of the study because no significant difference was observed between early and late respondents across all variables at $p > 0.05$.

Common Method Bias

The study adopted several measures to address the common method bias (CMB) including assuring anonymity of respondents and placing independent and dependent variables in different sections of the questionnaire. Additionally, Harman’s single-factor test was employed to assess the potential for CMB statistically. An exploratory factor analysis using unrotated principal component analysis was conducted on all latent variables. The results revealed several factors

with eigenvalues greater than 1 and the first factor explaining only 39.8% of the total variance. This implies that CMB is unlikely to have influenced the results since no single factor emerged and the first factor did not account for more than 50% of the variance.

Operationalization of Study Variables

The study included higher and lower order variables. The variables were adopted from previous literature and modified where necessary to fit the PSCs context. IAF competence (COMP) and IAF size (SIZE) were the independent variables, IAF readiness (IARC) was the mediator and RBIA implementation (IMPL) was the dependent variable. IMPL was taken as a reflective second-order construct with RBIA planning (PLAN), execution (EXEC) and reporting (REPO) as lower-order constructs. This approach improves theoretical parsimony and conceptual clarity while reducing model complexity (Johnson et al., 2011; Sarstedt et al., 2019). This conceptualization is appropriate because RBIA is a multidimensional construct manifested through the inclusion of risk assessment in all audit stages (IPPF, 2017). IAF readiness (IARC) was conceptualized as a second-order formative construct with commitment (COMM) and efficacy (EFFI) as lower-order constructs. This is consistent with Organizational Readiness Theory which defines readiness as the combined collective commitment and efficacy of members to implement change (Weiner, 2009). A formative model is appropriate because COMM and EFFI are conceptually distinct each with unique contribution to IARC. In addition, variation in these components is expected to cause variation in the readiness (Hair et al., 2024; Weiner, 2009). All lower-order constructs were measured reflectively. PLAN, EXEC and REPO were measured on a five-point Likert scale (ranging from 1 “not at all” to 5 “to a very large extent”). Similarly, COMM, EFFI and COMP were measured on a five-point Likert scale (ranging from 1 “strongly disagree” to 5 “strongly agree”). IAF size (SIZE) was measured by the number of full-time internal auditors. Finally, using NBAA guidelines, IAFs were categorized into three groups: small (fewer than 5 auditors), medium (5 to 10 auditors), and large (more than 10 auditors).

Data Analysis and Results

The Partial Least Squares Structural Equation Modelling (PLS-SEM) technique was used to analyse the data, as it facilitates the analysis of complex models (Hair et al., 2017; Sarstedt et al., 2016). A two-stage disjoint approach was employed because the model includes a reflective-formative higher-order construct (Hair et al., 2019). In the first stage, the repeated indicator approach was used to obtain the latent variable scores of the lower-order constructs. These scores were saved as new variables and then used as manifest variables in the higher-order measurement model in the second stage, as advocated by Sarstedt et al. (2019).

Organizational and Respondents' Profiles

Table 2 and 3 present the profiles of the organizations and respondents that participated in the study. Statistics indicate that no particular gender dominated the sample (52% male and 48% female). The results show that 173 (99.5%) of all surveyed chief internal auditors hold a master's degree, while one (0.5%) holds a PhD. The majority of respondents (98.4) possess no professional qualifications other than the CPA, while 1.1% hold the CIA and 0.5% hold the CISA designation. Regarding work experience, 25.9% of respondents have less than five years of experience, 38.5% have between five and ten years, and the remaining 35.6% have more than ten years. The respondents' level of education, professional qualifications and experience in the internal audit field indicate that they possessed sufficient knowledge of the RBIA implementation.

Table 2: Respondents' Profile

Profile dimension	Information	Frequency	Percent (%)
Gender	Male	90	52
	Female	84	48
Education Level	PhD	1	0.5
	Master's degree/Postgraduate diploma	173	99.5
Other Professional Qualification	CIA	2	1.1
	CISA	1	0.5
	CPA only	171	98.4
Working Experience	Less than 5 years	45	25.9
	5 to 10 years	67	38.5
	More than 10 years	62	35.6

Table 3 shows that 109 PSCs (62.7%) had small units with fewer than five internal auditors, while 50 PSCs (28.7%) had medium-sized units with five to ten auditors. Only 15 PSCs (8.6%) had large internal audit units with more than ten staff members. The results also indicate that PSCs from all sectors as per the ISIC classification participated in the study which confirms the representativeness of the sample.

Table 3: Organizations' Profile

Profile dimension	Information	Frequency	Percent (%)
Industry	Utilities	46	26.4
	Mining, Quarrying and Oil and Gas Extraction	5	2.9
	Real Estate, Rental and Leasing	2	1.1
	Health Care and Social Assistance including Social Security Fund	13	7.5
	Professional, Scientific and Technical Services	26	15.0
	Finance, Banking and Insurance	6	3.5
	Manufacturing	1	0.6
	Telecommunication/Broadcasting and Publishing	3	1.7
	Agriculture, Forestry, Fishing and Hunting	17	9.7
	Construction	4	2.3
	Arts, Entertainment and Recreation	6	3.4
	Transport and warehousing	10	5.8
	Education	35	20.1
Number of internal auditors	Less than 5	109	62.7
	5-10	50	28.7
	More than 10	15	8.6

Source: Field Data (2024)

Measurement Model Evaluation

The study assessed indicator reliability, construct reliability, convergent validity and discriminant validity to evaluate the measurement model. Indicator reliability was examined using outer loadings with a threshold of 0.7. Following this assessment, four indicators were removed because their outer loadings fell below 0.6: EFFI5 (0.587), EXEC5 (0.494), PLAN1 (0.557) and REPO3 (0.445). Their removal improved the internal consistency reliability of their respective variables without significantly altering the model’s robustness. Construct reliability for the reflectively measured variables was assessed by using Cronbach’s Alpha and composite reliability (CR). The Cronbach’s Alpha and CR values of the study exceeded the 0.7 threshold, indicating that the variables possess internal consistency reliability. Furthermore, convergent validity was confirmed using Average Variance Extracted (AVE). All AVE values were greater than 0.5, implying 50% of the variance in their indicators is explained by the constructs. Table 4 below presents the results for indicator reliability, construct reliability and convergent validity.

Table 4: Construct Reliability and Validity

Variable	Indicator	Outer loading	Cronbach's alpha	CR (rho a)	rho c	AVE
COMP	COMP1	0.691	0.859	0.862	0.895	0.588
	COMP 2	0.717				
	COMP3	0.812				
	COMP4	0.771				
	COMP5	0.772				
	COMP6	0.829				
COMM	COMM1	0.842	0.796	0.797	0.861	0.557
	COMM2	0.797				
	COMM3	0.792				
	COMM4	0.635				
	COMM5	0.640				
EFFI	EFFI1	0.849	0.888	0.891	0.918	0.692
	EFFI2	0.807				
	EFFI3	0.866				
	EFFI4	0.873				
	EFFI6	0.760				
PLAN	PLAN2	0.843	0.836	0.844	0.890	0.670
	PLAN3	0.862				
	PLAN4	0.780				
	PLAN5	0.787				
EXEC	EXEC1	0.919	0.906	0.910	0.935	0.782
	EXEC2	0.899				
	EXEC3	0.889				
	EXEC4	0.827				
REPO	REPO1	0.790	0.885	0.891	0.921	0.746
	REPO2	0.818				
	REPO3	0.923				
	REPO4	0.916				
IMPL			0.849	0.850	0.909	0.769

Discriminant validity was assessed using the Heterotrait-Monotrait ratio (HTMT). An HTMT value below 0.85 indicates that the variables are not similar (Hair et al., 2019a). As presented in Table 5, all reflectively measured constructs and variables had HTMT values of less than 0.85, confirming that the constructs are conceptually distinct.

Table 5: Discriminant Validity of Lower-order constructs (HTMT), n=174

	COMM	COMP	EFFI	EXEC	PLAN	REPO
COMM						
COMP	0.521					
EFFI	0.805	0.592				
EXEC	0.584	0.650	0.706			
PLAN	0.665	0.621	0.757	0.748		
REPO	0.697	0.572	0.682	0.730	0.733	

The study assessed convergent validity, indicator correlation, significance and relevance of outer weights to evaluate formative measurement model as advocated by Hair et al. (2017). Convergent validity was examined using redundancy analysis to test whether the formatively measured construct (IARC) is highly correlated with IARC measured reflectively (IARC-G) as proposed by Chin,(1998). Convergence validity is achieved if the path coefficient between the formatively measured construct and the global item is at least 0.7 and the R² of the global item is at least 0.50 (Ramayah et al., 2018). The redundancy analysis yielded a path coefficient of 0.841 and an R² of 0.708 as shown in Figure 2. The results suggest that IARC exhibits convergence validity.

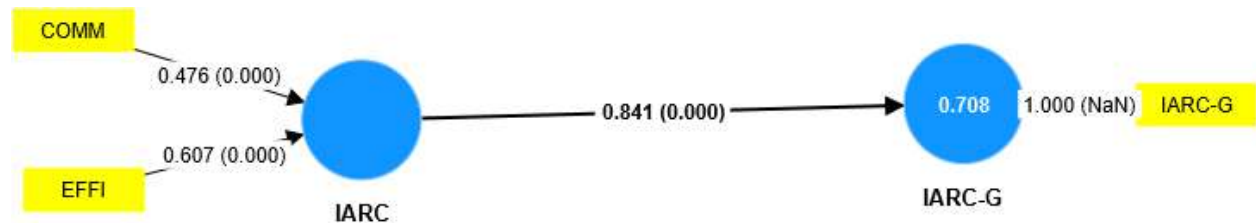


Figure 2: Results of Redundancy Analysis of the formative higher-order construct (IARC)

Notes: COMM=commitment EFFI = Efficacy, IARC=IAF readiness. IARC-G=Global IARC

Collinearity among COMM and EFFI, the formative indicators of IARC was determined using the Variance Inflation Factor (VIF). The VIF values for both COMM and EFFI are lower than 3, indicating an absence of critical collinearity problems among the indicators (Table 7). To determine the significance of the indicators’ outer weights, a bootstrapping procedure using 5,000 samples was conducted. The results, as presented in Table 6, show that the outer weights for COMM and EFFI are all significant at $p < 0.05$.

Table 6: Correlation, significance, and relevance of formative indicators

Relationship	Outer weight	Std dev	t-value	p-value	Confidence Interval	VIF	Remarks
COMM->IARC	0.321	0.114	2.870	0.007	0.113 ; 0.551	2.002	Significant, no collinerity
EFFI -> IARC	0.748	0.101	7.348	0.000	0.523 ; 0.917	2.202	Significant, no collinerity

Structural Model Evaluation and Hypothesis Testing

The study evaluated the structural model by assessing collinearity, the coefficient of determination (R^2), the significance of path coefficients and model predictive power as suggested by Hair et al. (2021). The evaluation began by running the Smart-PLS4 algorithm to determine R^2 , f^2 , VIF and path coefficients followed by a bootstrapping method with 5,000 subsamples to test the significance and strength of the results. Additionally, a blindfolding procedure was performed to determine the model's predictive relevance (Q^2). At this stage, the higher-order constructs, IARC and IMPL were measured using the construct scores of their respective lower-order constructs obtained from the first stage. As presented in Table 6, the VIF for all indicators is less than 3.3 indicating that the model is free from collinearity issues (Hair et al., 2019). As shown in Figure 3 and Table 7, the explanatory power (R^2) of the two endogenous variables, IARC and IMPL, is 0.281 and 0.617, respectively. This implies that COMP and SIZE account for 28.1% of the variation in IARC while COMP, SIZE and IARC together explain 61.7% of the variation in IMPL. The effect sizes (f^2), which measure the magnitude of the effect of predictor variables on endogeneous variables are large for IARC on IMPL ($f^2 = 0.631$) and medium for COMP on IMPL ($f^2 = 0.179$). No influence was found for SIZE on IARC ($f^2 = 0.001$) or IMPL ($f^2 = 0.000$). These results reveal that IARC and COMP contribute substantially and moderately to the explained variance of IMPL, respectively. Additionally, COMP was found to have a substantial contribution to the explained variance of IARC ($f^2 = 0.334$). Finally, the Q^2 value for IMPL is 0.462, which is greater than zero, confirming the model has predictive relevance(Hair et al., 2021).

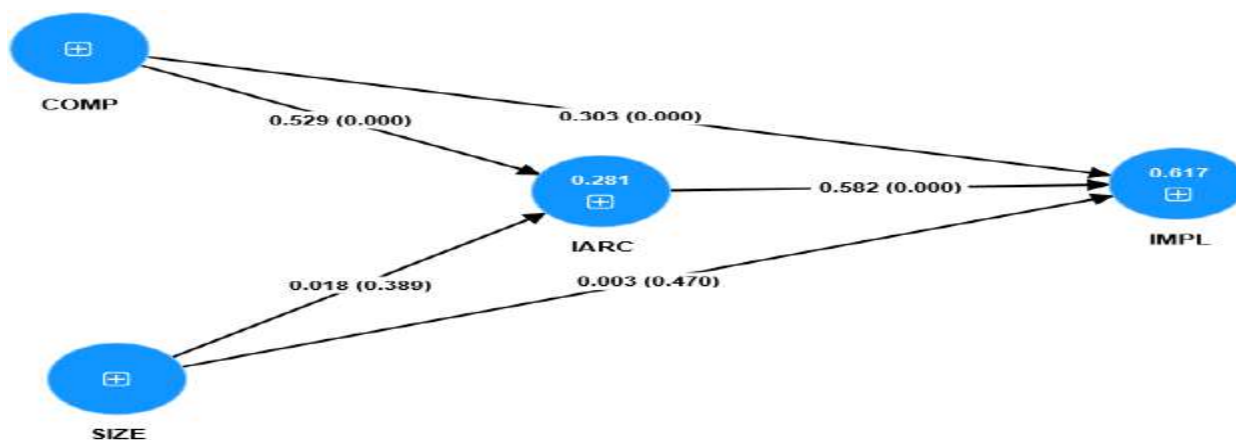


Figure 3: PLS Path Model Results (Second Stage), n=174

Table 7: Structural model evaluation results(n=174)

Hypothesis no.	Relationship	VIF	f^2	Beta	P-value	Hypothesis Supported?
Direct Effect						
Hypothesis H1	COMP -> IMPL	1.391	0.179	0.303*	0.000	Yes
Hypothesis H2	SIZE -> IMPL	1.002	0.000	0.003	0.470	No
Hypothesis H3	IARC -> IMPL	1.391	0.631	0.582*	0.000	Yes

Indirect Effect						
H4a	COMP->IARC->IMPL		0.334	0.311*	0.000	Yes
H4b	SIZE -> IARC -> IMPL		0.001	0.011	0.780	No
Q ² - IMPL			0.462			
R ² - IMPL			0.617			
Adjusted R ² IMPL			0.611			
R ² IARC			0.281			
Adjusted R ² IARC			0.274			
SRMR			0.063			

Note:

Effect sizes (f^2) = 0.02(small effect), 0.15(medium effect), and 0.35(large effect) (Cohen, 1988)
 ** p < 0.000 level of significance, Q²>0 implies predictive relevance (Hair et al.,2021)
 SRMR<0.08 implies acceptable model fit (Hair et al.,2021)

Testing of Direct Effect Hypotheses

As presented in Table 7, at a 95% confidence interval, the direct relationships for H1 ($\beta = 0.303$, $p = 0.000$) and H3 ($\beta = 0.582$, $p = 0.000$) are supported. This indicates a significant positive relationship between COMP on IMPL and IARC on IMPL, respectively. Specifically, a unit increase in COMP is related to a 0.303 increase in IMPL, while a unit increase in IARC increases IMPL by 0.582. Conversely, SIZE was found to have a positive but insignificant relationship to IMPL; thus H2 ($\beta = 0.003$, $p = 0.470$) is not supported. To validate this insignificant effect, the study conducted robustness checks, including assessments of SIZE distribution skewness, multicollinearity, and a logarithm transformation of the size variable. The results reveal that the IAF size distribution is not skewed (skewness = 0.668, std error = 0.171) and no critical collinearity existed between SIZE and IMPL (VIF = 1.002). Furthermore, significance tests using logarithm of SIZE also yielded insignificant results ($\beta = -0.018$, $p = 0.420$) confirming that this is a substantive finding rather than a methodological artifact.

Testing of Mediation Effect Hypotheses

The results indicate that COMP influences IMPL both directly and indirectly through IARC making IARC a partial mediator. The nature of this mediation is complementary, as both direct and indirect effects are significant and move in the same direction ($\beta = 0.311$, $p = 0.000, 0.226; 0.391$). Analysis of Variance Accounted For (VAF) shows that 50.67% of the effect of COMP on IMPL passes through IARC confirming the presence of partial mediation.

Assessing Model Robustness

The study assessed unobserved heterogeneity using the Finite Mixture Partial Least Square (FIMIX-PLS) technique to determine if distinct groups existed within the dataset. FIMIX-PLS results indicated that the number of segments ranged between 1 and 5. While AIC3 and BIC suggested 5 segments, CAIC and AIC4 pointed toward a single-segment solution. Analysis of relative segment sizes revealed that using more than two segments was not practical. For a 2-segment solution, Segment 1 contained 87.1% (152 observations), while Segment 2 contained only 12.9% (22 observations). The second segment falls below the minimum required sample size

of 30 for segment-specific PLS-SEM analysis. The FIMIX-PLS therefore suggests no substantial level of heterogeneity and the analysis remains limited to the aggregate dataset.

Discussion of Findings

This study investigated the relationship between IAF competence, size and readiness on RBIA implementation, grounded in Resource-Based View and Organizational Readiness Theory. Results indicate a significant positive relationship between IAF competence, readiness and RBIA implementation. This supports the RBV by confirming that knowledgeable, skilled and experienced auditors are essential for a successful shift from compliance-based auditing to RBIA. These findings align with Jaber (2024) and Saleem et al. (2019) as well as IIA standard 3.1. Interestingly, this contradicts Abidin (2017), likely because this study used a more comprehensive definition of competence that incorporates knowledge, skills, and experience rather than experience alone. The strong positive relationship between IAF readiness and RBIA implementation aligns with ORT emphasizing that collective commitment and efficacy drive risk-based audit. Practically, this suggests that internal auditors must possess both a positive attitude toward RBIA's value and confidence in their ability to execute it.

Contrary to the RBV, IAF size was not significantly related to RBIA implementation in Tanzania PSCs. This suggests that the quality and professional diversity of auditors are more critical than numbers. In the Tanzanian context, audit units often lack multidisciplinary diversity as auditors are traditionally recruited solely from accounting backgrounds. Since RBIA is a skill-intensive process rather than labor-intensive one, increasing the number of staff without addressing professional diversity does not enhance implementation. This finding is consistent with Abidin (2017) who also utilized process indicators that emphasize qualitative assessment over quantitative output. The results indicate a significant partial mediation role of IAF readiness on the relationship between competence and RBIA implementation. This aligns with ORT and previous empirical studies across various disciplines including project management (Santos et al., 2024), education (Sudhartio et al., 2023) and healthcare (Santhidran & Chandran, 2013). These results indicate that IAF competence enhances RBIA implementation directly and by boosting IAF commitment and efficacy. The findings highlight that while building readiness is important, enhancing IAF competence remains critical for RBIA implementation in Tanzanian PSCs. Conversely, IAF readiness does not mediate the relationship between IAF size and RBIA implementation, implying that increasing the number of internal auditors enhances neither readiness nor RBIA implementation. In Tanzanian PSCs, the size of IAF does not reflect its commitment or its confidence in its ability to implement RBIA. Results imply that increasing IAF size without improving readiness related capacities may not enhance RBIA implementation.

Conclusion and Study Implications

The aim of this study was to examine the relationship between audit function resources, readiness and RBIA implementation. The results reveal that internal auditor's competence influences RBIA directly and indirectly through internal auditor's readiness. The study concludes that effective RBIA implementation occurs in PSCs when the audit functions possess the relevant skills, experience, knowledge and when internal auditors are committed and feel capable of implementing RBIA. Notably, the results indicate that readiness exerts a greater influence on RBIA than competence. This implies that while competence is essential, more attention should be paid to fostering readiness to enhance RBIA implementation.

Practical Implications

The findings of the study offer several practical implications for Chief Internal Auditors and Internal Auditor General Department (IAGD). For Chief Internal Auditors: The study suggests that IAF competence and readiness are vital determinants of RBIA implementation. Chief internal auditors should ensure that staff attend RBIA training, continuous professional development workshops and certification programs. Furthermore, increasing IAF size should be coupled with efforts to make the function multidisciplinary as increasing staff numbers alone does not drive implementation. For the Internal Auditor General Department (IAGD): The IAGD can utilize these findings to amend existing internal auditing guidelines. Specifically, the IAGD should consider introducing an RBIA readiness assessment tool to identify gaps before rollouts. Additionally, the IAGD may advocate for amending the Public Service Employment Scheme to recognize disciplines such as ICT, procurement, law, and engineering within the internal audit field, as RBIA extends beyond financial risks.

Theoretical Contributions

Theoretically, this study expands the application of ORT in internal auditing context. While previously applied in education and healthcare, the use of this theory here underscores the importance of considering readiness for all forthcoming changes in the internal auditing field. Also it contributes to RBIA knowledge by measuring RBIA as a higher order construct that integrates planning, execution and reporting unlike previous studies that used either unidimensional or fragmented dimensions of RBIA. Finally, the study provides empirical evidence of RBIA implementation in Tanzanian PSCs, offering insights into a cultural, social and political setting that is substantially different from developed and other developing countries.

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