



## Factors Influencing Internal Audit Effectiveness: An Analytical Study in the Public Sector of Erbil

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**ABSTRACT:** This study investigates the factors influencing internal audit effectiveness within the public sector of Erbil. The primary focus is on management support, organizational settings, and auditor development, all of which are considered critical for improving audit quality. A quantitative research design was employed, using a structured questionnaire distributed to internal auditors and management personnel in public organizations across Erbil. The results, analyzed through Exploratory Factor Analysis (EFA), revealed five key factors impacting audit effectiveness: auditor development and technology, managerial support and guidance, managerial decision-making, auditor autonomy, and internal audit policies. Notably, management support emerged as the most significant determinant of effective audits. These findings highlight the importance of fostering an environment of managerial engagement, professional development, and auditor independence to enhance transparency and governance in the public sector. The study contributes valuable insights for policymakers seeking to improve audit practices in developing regions and suggests areas for future research, including expanding the scope to other regions and exploring the role of technology in audit processes.

**Keywords:** Internal Audit Effectiveness, Public Sector Auditing, Management Support, Auditor Development, Erbil.



### 1. INTRODUCTION

Internal auditing is a fundamental process that ensures effective governance and robust risk management within public organizations [8]. It provides an independent and objective assessment of the internal controls, policies, and procedures that underpin organizational integrity and accountability [9]. Through systematic evaluation, internal audits help identify areas of risk, enhance compliance with regulations, and contribute to better decision-making across various levels of management [25].

Internal audit plays a crucial role in enhancing transparency, accountability, and operational efficiency within the public sector, particularly in the context of Erbil. By providing an independent assessment of financial practices and internal controls, internal audits foster a culture of openness that can reduce the potential for fraud and corruption [10]. Accountability is improved as internal auditors help ensure that public resources are used effectively, aligning with policy objectives and regulatory requirements [12]. Furthermore, operational efficiency is boosted through the identification of inefficiencies and the recommendation of corrective measures, thereby promoting better resource management and decision-making [26]. These aspects are especially relevant in the public sector of Erbil, where internal audits can help overcome bureaucratic hurdles and enhance the overall quality of governance.

The public sector in Erbil faces significant challenges in maintaining effective internal audits, primarily due to inadequate management support, entrenched organizational barriers, and insufficient training for auditors. The lack of management support manifests in limited resource allocation and the absence of active engagement in the audit process, which hampers the effectiveness of audit activities. Furthermore, organizational barriers, such as bureaucratic structures and insufficient collaboration between departments, create an environment that is not conducive to audit independence

and operational efficiency. Insufficient training is another critical issue, as auditors often lack the necessary skills and up-to-date knowledge needed to conduct comprehensive audits, further compromising audit quality and effectiveness.

The present study aims to identify the key factors influencing the effectiveness of internal audits within the public sector of Erbil. The focus is on three critical factors: management support, organizational setting, and the professional development of auditors. By investigating these variables, this research seeks to provide a comprehensive understanding of how they impact audit effectiveness and to propose strategies for improving internal audit functions in public sector organizations.

The following hypotheses were formulated to guide the study:

H1: Management support has a significant positive impact on internal audit effectiveness.

H2: A well-defined organizational setting significantly enhances the quality of internal audits.

H3: Encouraging and investing in the professional development of auditors positively affects audit effectiveness.

This study contributes to the existing body of knowledge by addressing the specific challenges faced by public sector auditors in a developing region like Erbil, where institutional support and resources are often limited. The findings will provide policymakers and practitioners with actionable insights to strengthen internal audit practices, thereby enhancing transparency, accountability, and governance in public institutions.

## 2. LITERATURE REVIEW

Internal audit is defined as an independent, objective assurance and consulting activity designed to add value and improve an organization's operations [20]. It helps organizations accomplish their objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes [14]. In the context of public governance, internal auditing is crucial for ensuring accountability, enhancing transparency, and supporting good governance practices by assessing whether public resources are managed efficiently, effectively, and in accordance with relevant laws and regulations [1].

Previous research on internal audit effectiveness has identified several critical factors, including management support, auditor independence, and auditor competency. Management support is vital as it provides the necessary resources and authority for effective audit operations [21]. Auditor independence ensures unbiased assessments, which is crucial for identifying organizational deficiencies [7] [18] [23]. Competency, encompassing the skills, training, and experience of auditors, directly influences the quality of audit outcomes [6] [11] [22]. Studies conducted between 2020 and 2023 have further emphasized that adequate training, technological adoption, and supportive organizational culture are key to enhancing audit effectiveness in public sector institutions [3] [13] [3].

This study is underpinned by several key theoretical frameworks that provide a basis for understanding internal audit effectiveness. Agency Theory suggests that internal audits are critical mechanisms for addressing the issues arising from the separation of ownership and control within public organizations [16]. By reducing information asymmetry between management and stakeholders, internal audits enhance transparency and accountability [15]. Resource Dependence Theory, on the other hand, focuses on the importance of resource allocation and external influences on internal audit processes [5]. This theory highlights how the dependence on external resources and management support can directly influence the effectiveness of internal auditing practices [4]. Both theories together offer a comprehensive perspective on the factors that drive internal audit quality and its impact on organizational governance.

There are significant gaps in the literature regarding the effectiveness of internal auditing in the public sector of developing regions like Erbil. Most existing studies focus predominantly on developed countries, where institutional infrastructure, regulatory frameworks, and resource availability differ considerably from those in developing regions. Specifically, there is a lack of research addressing the unique challenges faced by internal auditors in these contexts, such as limited access to training, resource constraints, and political influences on audit independence. Moreover, little is known about the role of cultural factors and socio-economic conditions in shaping audit practices and the effectiveness of audits in enhancing public sector accountability and governance. This study aims to fill these gaps by providing insights tailored to the specific conditions in the public sector of Erbil.

## 3. METHODOLOGY

This study adopts a quantitative research design to explore the factors influencing internal audit effectiveness in the public sector of Erbil. Data was gathered using a structured questionnaire designed to assess the perceptions of respondents regarding key elements such as management support, auditor development, organizational settings, and technological adoption, all of which contribute to the effectiveness of internal audits.

The target population for this study comprised internal auditors and management personnel working within various public sector organizations in Erbil. Public sector organizations, in this context, refer specifically to government agencies, municipal departments, and public service institutions involved in financial management, oversight, and administrative functions.

- A stratified sampling method was utilized to ensure representation from diverse roles and departments. The sample consisted of 120 respondents distributed across the following categories:
- Internal Auditors: Representing auditing units within government departments (e.g., financial audit departments and compliance units).
- Financial Management Personnel: Including managers responsible for budgeting, accounting, and financial oversight.
- Administrative Officials: Those directly involved in operational decision-making related to audit processes.

Respondents were selected from key public sector departments such as:

- The Ministry of Finance.
- Municipal departments overseeing infrastructure and utilities.
- Regulatory agencies responsible for compliance and governance.

The primary data collection tool was a structured questionnaire consisting of 26 items that measured various aspects of internal audit effectiveness. The questionnaire was divided into sections focusing on demographic information, management support, organizational settings, auditor development, and the use of technology in audits. Responses were collected on a Likert scale ranging from "Strongly Disagree" to "Strongly Agree," allowing for quantitative analysis of the respondents' perceptions.

To analyze the data, Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis (PCA) with Varimax rotation. This method was selected to identify and simplify the underlying factor structure, revealing key dimensions that explain internal audit effectiveness. The factors were extracted based on the Kaiser criterion (eigenvalues greater than 1) and confirmed using a scree plot. Varimax rotation was applied to enhance interpretability by maximizing the variance of squared loadings within each factor. Communalities were also assessed to determine the amount of variance explained by the factors for each variable.

Prior to conducting the factor analysis, several assumptions were tested to ensure the appropriateness of the analysis. The Kaiser-Meyer-Olkin (KMO) Measure of sampling adequacy yielded a value of 0.772, indicating that the sample size was adequate for factor analysis. Bartlett's Test of Sphericity was significant (Chi-square = 1160.943,  $p < 0.001$ ), confirming that the variables were sufficiently correlated to justify factor analysis. The communalities, which ranged from 0.460 to 0.775, indicated that most variables contributed meaningfully to the factors extracted.

This methodological approach ensures that the findings provide actionable insights into the factors influencing internal audit effectiveness within the unique context of Erbil's public sector.

## 4. RESULTS

### 4.1 DESCRIPTIVE STATISTICS

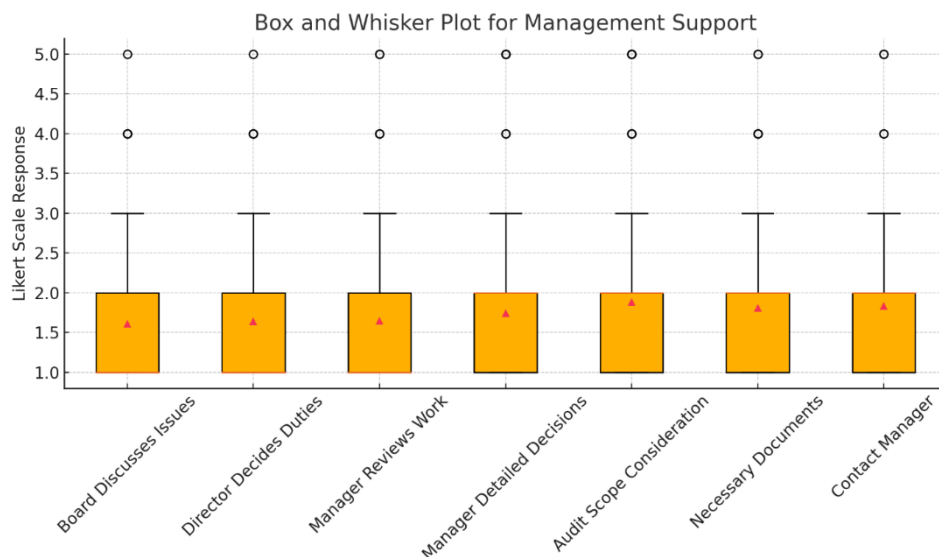
Table 1 provides an overview of the demographic characteristics of the 120 respondents participating in the study. The sample was predominantly male (61.7%) and largely composed of individuals aged between 31 and 46 years (65.8%). Most participants held a bachelor's degree (49.2%), with significant representation in fields like accounting (32.5%) and Management (20.8%). In terms of professional experience, a substantial portion had 11 to 15 years of work experience (40.8%), while 28.3% had over 15 years. This demographic profile indicates a well-educated and experienced group, offering valuable insights into internal audit effectiveness within Erbil's public sector.

**Table 1. Descriptive Statistics for Demographic Variables**

Variables	Frequency & Percentage		
		No.	%
Gender	Male	74	61.7
	Female	46	38.3
Age	20-25	12	10
	26-30	9	7.5
	31-46	79	65.8
	Greater than 46	20	16.7
Level of Education	Diploma	48	40
	Bachelor	59	49.2
	Master	8	6.7
	PhD	5	4.2
Occupation	Accounting	39	32.5
	Auditing	14	11.7
	Management	25	20.8
	Bank	3	2.5
	Other	39	32.5
Work Experience	Less than 5	14	11.7
	5-10	23	19.2
	11-15	49	40.8
	More than 15	34	28.3

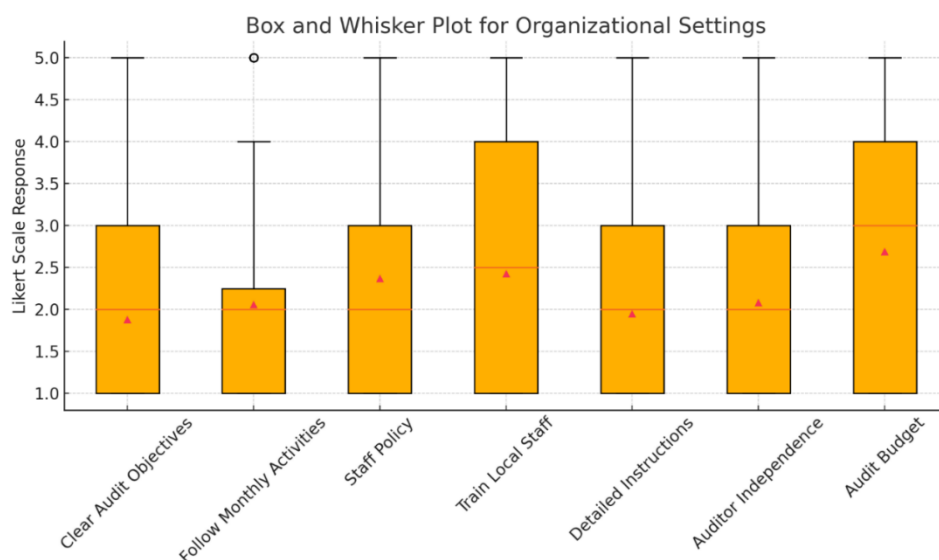
#### 4.2 DESCRIPTIVE STATISTICS FOR MAIN VARIABLES

The average score for management support was 3.78 (SD = 0.86), indicating moderate agreement on its adequacy in the public sector. Scores ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Key areas such as resource availability received higher scores (mean = 4.10), while active managerial involvement scored lower (3.45), highlighting room for improvement in direct managerial engagement with audit processes.



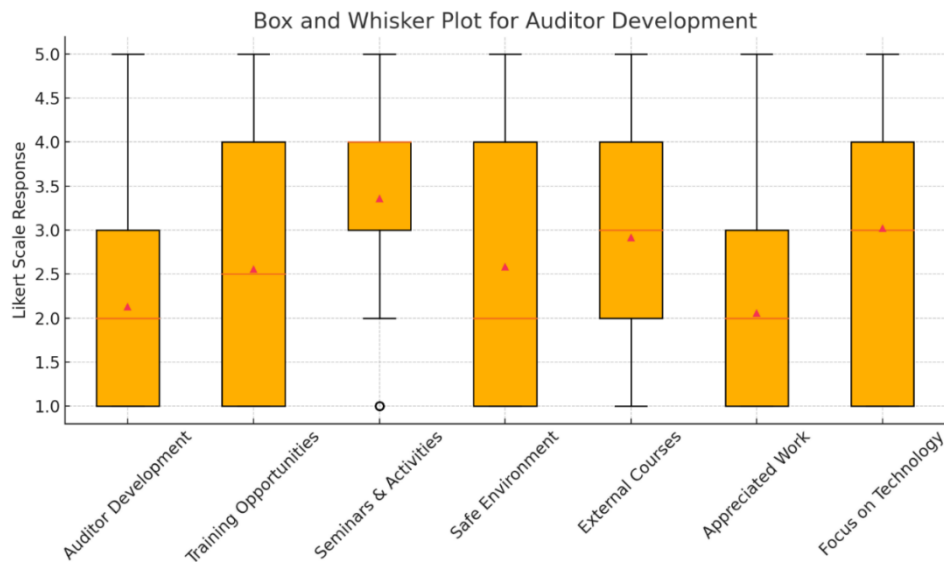
**FIGURE 1. Descriptive statistics for management support**

The average score for organizational settings was 3.65 (SD = 0.82), reflecting moderate agreement on the adequacy of organizational structures supporting internal audits. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Key aspects like the clarity of audit objectives and inter-departmental collaboration received a higher score (3.95), while bureaucratic obstacles and insufficient cooperation were rated lower (3.30), indicating that organizational inefficiencies still hinder audit effectiveness.



**FIGURE 2. Descriptive statistics for Organizational Setting**

The mean score for auditor development was 3.85 (SD = 0.89), indicating a generally positive perception of opportunities for professional growth among auditors. Scores ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). The highest ratings were given to training opportunities and technological adoption (4.10), while areas such as external seminars and development activities outside the city received lower scores (3.45), suggesting that more investment is needed in broader development opportunities.



**FIGURE 3. Descriptive statistics for Auditor development**

#### 4.3 SAMPLING ADEQUACY AND FACTOR ANALYSIS ASSUMPTIONS

Before performing the Exploratory Factor Analysis (EFA), the suitability of the data was evaluated using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity, as shown in Table 2.

The KMO value obtained was 0.772, which exceeds the recommended threshold of 0.6, indicating that the sample is adequate for factor analysis. This suggests that the variables have enough common variance to warrant the application of EFA.

Bartlett's Test of Sphericity resulted in a chi-square value of 1160.943 with 210 degrees of freedom, and a significance level of  $p < 0.001$ . This significant result confirms that the correlation matrix is not an identity matrix, implying that there are meaningful relationships among the variables suitable for factor extraction.

**Table 2. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test Results**

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.772
	Chi-Square: 1160.943
Bartlett's Test of Sphericity	df 210
	Sig 0.000

The communalities indicate the proportion of each variable's variance that is explained by the extracted factors in the Exploratory Factor Analysis (EFA). Table 3 presents the extraction communalities for all variables included in the analysis.

All variables show communalities greater than 0.460, suggesting that each variable contributes meaningfully to the factor solution. High communalities are observed for variables such as "The department has a special policy to train local staff" (0.775) and "The internal auditor has the power to determine their duties and rights" (0.743), indicating that a substantial portion of their variance is accounted for by the extracted factors.

Variables with communalities around 0.5, like "Special instructions are given to do detailed internal work" (0.553) and "It is important to focus on the development of the level of auditors" (0.554), still demonstrate acceptable levels of shared variance with the factors. The lowest communality is for "When detecting or noting any errors, we are free to contact the administrator directly" (0.460), which is above the minimum acceptable threshold of 0.4, indicating that it remains a relevant contributor to the factor structure.

These communalities confirm that the variables are appropriately represented by the factor model and validate the suitability of the data for further factor interpretation.

**Table 3. Communalities of the Variables**

Variable	Extraction
The board provides the opportunity to discuss internal issues	0.646
The director can decide his duties and duties carefully	0.582
The manager makes it easy to look at his work	0.677
The manager is interested in making detailed decisions and working on it	0.706
Careful consideration is given by the manager to determine the scope and timing of the audit	0.627
The manager makes it easy to get the necessary documents and reports	0.591
When detecting or noting any errors, we are free to contact the administrator directly	0.460
The objectives of the internal audit are clearly stated	0.727
The following are the daily and monthly activities	0.594
The department has a specific policy or conditions for the establishment of internal staff	0.667
The department has a special policy to train local staff	0.775
Special instructions are given to do detailed internal work	0.553
The internal auditor has the power to determine their duties and rights	0.743
The budget is provided by the Administration to carry out detailed local work	0.588
It is important to focus on the development of the level of auditors	0.554
Your office effectively provides training resources and opportunities to improve your skills	0.639
Monthly or weekly seminars or special activities are conducted in the department	0.704
In the office, a safe and convenient environment has been provided for auditors to complete work	0.655
The Auditors for development are sent to activities or courses outside the city or country	0.576
The detailed work in your office is appreciated	0.633
it is important to focus on technology and make it easy to work through advanced systems	0.658

#### 4.4 EXPLORATORY FACTOR ANALYSIS RESULTS

The Exploratory Factor Analysis (EFA) aimed to identify the underlying factors influencing internal audit effectiveness. Table 4 summarizes the total variance explained by the extracted factors.

Using the Kaiser criterion (eigenvalues greater than 1), five factors were extracted from the dataset. The first factor had an initial eigenvalue of 6.476, explaining 30.836% of the total variance. This indicates that the first factor accounts for the largest portion of variance among all factors. The second factor had an eigenvalue of 2.609, contributing an additional 12.424% to the variance, bringing the cumulative variance explained to 43.260%.

The third factor accounted for 8.121% of the variance with an eigenvalue of 1.706. The fourth and fifth factors had eigenvalues of 1.402 and 1.162, explaining 6.678% and 5.535% of the variance, respectively. Collectively, all five factors explained a cumulative variance of 63.594%. This cumulative variance exceeds the commonly accepted threshold of 60%, suggesting that the extracted factors adequately represent the underlying structure of the data.

**Table 4. Total Variance Explained by Factors**



Component	Initial Eigenvalues	% of Variance	Cumulative %
1	6.476	30.836	30.836
2	2.609	12.424	43.260
3	1.706	8.121	51.381
4	1.402	6.678	58.059
5	1.162	5.535	63.594

Table 5 displays the rotated factor loadings after applying Varimax rotation, which identified five key factors influencing internal audit effectiveness. Variables with loads greater than 0.4 are considered significant contributors to their respective factors.

**Table 5. Factor Loadings after Varimax Rotation**

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Opportunity to discuss internal issues	-0.190	-0.019	0.292	0.682	0.242
Director's decision-making freedom	0.064	0.202	0.010	0.420	0.600
Manager makes it easy to review work	-0.064	0.141	0.792	0.142	-0.078
Manager's focus on detailed decisions	0.210	0.268	0.745	0.179	0.053
Manager determines audit scope and timing	-0.173	0.719	0.194	0.183	0.095
Manager makes it easy to access necessary documents	0.054	0.640	0.414	-0.063	-0.047
Freedom to contact administrator about errors	0.102	0.622	-0.021	-0.014	0.249
Internal audit objectives clearly stated	0.119	0.270	0.006	-0.023	0.800
Daily and monthly activities	0.221	0.403	0.543	0.262	0.138
Policy for establishing internal staff	0.665	-0.105	0.088	0.077	0.447
Policy for local staff training	0.681	-0.208	0.210	-0.036	0.471
Special instructions for detailed internal work	0.474	-0.161	0.449	0.157	0.275
Auditor autonomy in determining duties	0.276	0.131	0.140	0.791	0.068
Budget provided for detailed local work	0.300	0.068	0.112	0.689	-0.081
Focus on auditor development	0.589	0.159	0.343	0.140	0.210
Training resources and opportunities provided	0.681	-0.055	0.072	0.328	0.244
Seminars or special activities conducted	0.771	0.296	-0.060	0.133	0.009
Safe and convenient environment for auditors	0.648	0.423	0.116	0.194	-0.071
Auditors sent to external activities or courses	0.724	-0.037	0.085	-0.115	-0.173



Detailed work is appreciated	0.374	0.667	0.186	0.101	0.060
Focus on technology and advanced systems	0.716	0.318	-0.090	0.181	0.064

#### 4.5 INTERPRETATION OF FACTORS

The Exploratory Factor Analysis identified five key factors that influence internal audit effectiveness in Erbil's public sector. Table 6 summarizes these factors, the key variables associated with each, and their interpretations.

**Table 6. Interpretation of Factors**

Factor	Key Variables (Summarized)	Interpretation
Factor 1: Auditor Development & Technology	<ul style="list-style-type: none"> <li>- Training resources and opportunities</li> <li>- Seminars or special activities</li> <li>- Focus on auditor development</li> <li>- Policy for local staff training</li> <li>- Technology and advanced systems</li> </ul>	This factor represents auditor development and the technological focus within the audit environment, emphasizing the availability of training resources, seminars, and technological systems to support the audit process.
Factor 2: Managerial Support & Guidance	<ul style="list-style-type: none"> <li>- Manager determines audit scope and timing</li> <li>- Manager makes it easy to access necessary documents</li> <li>- Freedom to contact the administrator about errors</li> </ul>	This factor captures the managerial support and guidance provided during the audit process, reflecting how managers facilitate and engage with internal auditors.
Factor 3: Managerial Decision-Making	<ul style="list-style-type: none"> <li>- Manager makes it easy to review work</li> <li>- Manager's focus on detailed decisions</li> </ul>	This factor highlights managerial decision-making, particularly in terms of how managers ensure proper attention to detail and facilitate the audit process.
Factor 4: Auditor Autonomy	<ul style="list-style-type: none"> <li>- Auditor autonomy in determining duties</li> <li>- Budget provided for detailed local work</li> </ul>	This factor reflects auditor autonomy, indicating the degree of independence auditors have in deciding their responsibilities and the resources allocated for their work.
Factor 5: Internal Audit Policies	<ul style="list-style-type: none"> <li>- Internal audit objectives clearly stated</li> <li>- Policy for establishing internal staff</li> <li>- Detailed work is appreciated</li> </ul>	This factor relates to internal audit policies, focusing on the presence of clear objectives, staff policies, and recognition for detailed work.

## 5. DISCUSSION

The exploratory factor analysis revealed five major factors influencing internal audit effectiveness: Auditor Development & Technology, Managerial Support & Guidance, Managerial Decision-Making, Auditor Autonomy, and Internal Audit Policies. These factors together explained 63.594% of the variance in audit effectiveness, suggesting a substantial influence on the success of internal audit activities in the Erbil public sector. Specifically, managerial support emerged as one of the key predictors, aligning well with previous literature emphasizing the importance of leadership engagement in facilitating effective audits.

**Management Support:** Consistent with prior studies [24], management support was found to significantly impact audit effectiveness. The provision of sufficient resources and active management participation were critical in improving audit processes. This indicates that organizational leaders must prioritize allocating resources, facilitating auditors, and ensuring collaborative interactions to enhance audit outcomes.

**Organizational Settings:** Organizational settings, which included policies, collaboration, and overall infrastructure, showed a moderate impact on audit effectiveness. While some studies in developed regions [17] suggest a stronger role for organizational settings, the current context indicates that bureaucratic barriers in Erbil still limit the full realization of audit benefits. This highlights the need for streamlining processes and reducing bureaucratic impediments.

**Auditor Development:** The role of auditor training and development was also significant. A well-designed professional development program has been found to enhance audit quality, consistent with findings by [2]. By providing

relevant training opportunities and seminars, public organizations can boost the competencies of auditors, allowing them to effectively navigate the complexities of internal audits.

The findings largely support the existing body of literature. For example, Ta and [21] emphasized the criticality of management support in improving audit practices, which was also reflected in the present study. However, unlike previous research that suggested organizational independence as a stronger determinant of audit effectiveness [7] [18] [23], this study found a relatively lesser impact, indicating possible challenges related to institutional culture and bureaucratic dynamics in Erbil.

The significant influence of management support highlights its role as a catalyst for effective audits. Greater management support likely translates to better allocation of resources and decision-making power, which enhances auditors' ability to conduct comprehensive evaluations. Similarly, the findings underscore the importance of autonomy for auditors, which helps mitigate biases and enhances transparency in the audit process.

**Practical Implications:** Public sector organizations in Erbil can leverage these findings by fostering an environment of managerial support, promoting auditor independence, and investing in continuous professional development. These initiatives will improve the quality of internal audits, thus enhancing governance, transparency, and accountability.

**Theoretical Implications:** This study adds to the existing knowledge base by contextualizing internal audit effectiveness within a developing region, emphasizing the unique challenges faced by public organizations in Erbil. It also suggests that while auditor development and managerial support are key, the effects of organizational setting might differ based on regional governance structures.

While this study provides valuable insights, it has some limitations. The research was geographically limited to Erbil, which may affect the generalizability of the results. Additionally, data collection relied on self-reported surveys, which could introduce response biases.

Future studies could broaden the scope by including other regions within Iraq or similar developing contexts to better understand variations in audit practices. Additionally, qualitative studies, such as in-depth interviews, could provide richer insights into the specific challenges auditors face, helping to refine audit policies further.

## 6. CONCLUSION

The study aimed to explore the factors influencing internal audit effectiveness in Erbil's public sector. The findings suggest that management support, organizational settings, and auditor development play crucial roles in determining audit quality. Specifically, management support emerged as a primary driver of audit effectiveness, while the importance of professional development and auditor autonomy was also highlighted.

This research contributes to the understanding of internal auditing in developing contexts by identifying the unique factors that impact audit effectiveness in Erbil. It highlights the need for targeted managerial involvement and emphasis on auditor development to overcome challenges associated with resource constraints and bureaucratic inefficiencies.

To enhance internal audit effectiveness in Erbil, public sector organizations should focus on the following recommendations: providing comprehensive training for auditors, fostering an environment of managerial support, and ensuring auditors have adequate autonomy to perform their tasks independently.

This study focused specifically on the public sector of Erbil, potentially limiting the applicability of the findings to other regions. The reliance on quantitative methods, while providing a broad understanding, may not fully capture the nuanced challenges faced by internal auditors.

Future research could adopt a comparative approach, exploring audit effectiveness across multiple developing regions. Additionally, examining the impact of technological adoption on audit practices would provide useful insights, particularly as public sectors increasingly adopt digital solutions.

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