

# The Effect Of The Quality Of Internal Audit Function To Improve The Operational Efficiency Of Companies: An Empirical Study

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## Abstract

The study explores the effect of the quality of internal audit function to improve the operational efficiency of Iraqi companies represented by the banking and industrial sectors. It deals with the concept of the quality of the internal audit function and its role in raising the efficiency and performance of companies, to assist in managing and improving strategic decision-making then improving operational efficiency. An empirical study is conducted on a sample of companies listed on the Iraqi Stock Exchange for the period (2012-2019). The (SPSS) program is used for the purpose of statistical analysis of these data and examining the nature of the relationship and the effect between the independent variables and the dependent variable. The Data Envelope Analysis: (DEA) program is used to measure operational efficiency. The study concludes that there is a positive relationship between the qualification and professionalism of the internal audit department members and the annual training courses and courses for international internal auditing standards with operational efficiency. While the relationship is negative between the average wages of the internal audit department members and operational efficiency.

## Keywords

Internal Audit Function Quality, Operational Efficiency, Data Envelope Analysis.

## Introduction

Companies are an integral part of the general economy of the country, especially with regard to employment and their contribution to the GDP. Therefore, the various authorities, represented by the government, shareholders, investors, stakeholders, and even employees of these companies need certified financial information and reports that reflect the efficiency and ability that these companies have to stay in the market. The market is characterized by intense competition and to fulfill all its obligations, therefore, internal audit functions have gained increasing interest in companies with regard to the quality of service they perform. It is and the significance of the role that the internal audit function plays in financial reporting and corporate governance. In this study, researchers examine the effectiveness of the quality of internal audit function and its role in raising and improving the operational efficiency of companies.

Therefore, this study is organized as follows: The first axis includes the methodology of the study and previous studies. The second axis includes the theoretical framework of the internal audit function and its relationship to operational efficiency. The third axis includes the applied study. The fourth axis includes conclusions and recommendations.

## **Methodology and Previous Studies**

### **Research Methodology**

The research methodology includes the question-formed research gap that is answered in a research hypothesis that is consistent with the set of goals. The researchers seek to achieve research methods to be appropriate for the nature of the current research.

#### **1. Research Problem**

Due to the development in the business environment, it has become important to focus on the internal audit function at the company level, because of its role in improving the quality of financial reports ,deterring bad administrative behavior and reducing fraud risks. In addition, a high-quality internal audit function can help external auditors to assess the quality of the financial report, which leads to a decrease in external audit fees and an increase in audit efficiency. Therefore, the research problem is represented in the following main question (Is there a relationship between the quality of the internal audit function and the operational efficiency of companies and banks).

#### **2. Research Hypothesis**

Through the research problem identified within the question posed, the research is based on the following main hypothesis :H1) There is a significant relationship between the

internal audit function with all its measures and the operational efficiency of the study sample companies and banks.

### **3. Significance of Research**

The research significance stems from the variables that are addressed, namely, the quality of the internal audit function and operational efficiency. The quality of the internal audit function significance lies in improving companies' business, the quality of financial reports, as well as enhancing the effectiveness of internal control over financial reports, reducing fraud risks, and helping external auditors in assessing the quality of financial reports. As a result of the integration of research variables to improve the operational efficiency of companies to meet the needs of internal and external parties, and considering that industrial companies and banks are of great importance. Thus, the focus is on the role of the internal audit function to improve the operational efficiency of these companies and banks.

### **4. Research Objective**

The main objective of the research is (the possibility of the quality of the internal audit function affecting the operational efficiency of companies and banks) and stems from this main objective which are the following sub-objectives:

- a. A statement of the concept of internal audit quality and its dimensions, and the factors that motivate companies to establish an internal audit function.
- b. Statement of the concept of operational efficiency, its components, and its significance to companies.
- c. Highlighting the relationship between the internal audit function and the operational efficiency of companies and deepen researchers' understanding of the role of the internal audit function in raising and improving this efficiency.

### **Previous Studies**

There are many studies that have linked internal auditing and efficiency. Among these studies; Cho et al., 2015, Cheng et al., 2018, Chen et al., 2020, Shin & Park, 2020. Cho et al., 2015 examines the impact of the characteristics of legal internal auditors on operating efficiency, as the study dealt with a sample of companies listed on the Korean Stock Exchange for (2009-2010). Researchers used data envelope analysis to measure operational efficiency, and the study concludes that there is no statistically significant relationship between the variable, the efficiency of the legal internal auditors and the operational efficiency. In addition to the presence of a positive and statistically significant

correlation between attending the Board of Directors' meetings of the legal internal auditors and the operational efficiency.

As for Cheng et al., 2018 aims to find out whether the internal control over financial reporting affect the operational efficiency of the company through the use of a sample of (4300 companies) for (2004-2013). They use the regression model (Tobit) to test the relationship between the effectiveness of internal control and the operational efficiency of companies. In addition to analyzing the data envelope to measure the operational efficiency of companies, the study finds that operational efficiency is significantly lower among companies that suffer from weaknesses in internal control compared to companies that do not have weaknesses.

Chen et al., 2020 examines the effects of the quality of the internal audit function on the operational efficiency of Chinese companies. A sample of 2526 Chinese companies listed on the stock exchange for (2011-2013), the independent variable is measured. The quality of the internal audit function through efficiency and independence, while the dependent variable operational efficiency is measured using data envelope analysis. The study concludes that the quality of the internal audit function is positively related to the operational efficiency of the company. In addition, the study found that the quality of the internal audit function can significantly improve the operational efficiency of the company in the presence of effective corporate governance at the company level and strong institutions at the provincial level in China. The internal audit function can also improve the operational efficiency of the company by enhancing the quality of the company's internal control.

Shin & Park, 2020 examines the relationship between the characteristics of the director of internal control and the operational efficiency of companies. The study deals with a sample of public companies listed on the Korean Stock Exchange during (2011-2015), and the operational efficiency is measured using data envelope analysis. The study uses normal regression models to examine how knowledge and ownership are related to internal control managers with operational efficiency. The study concludes that operational efficiency increases with the increase in knowledge related to the functions of internal control managers and the diversity of companies, and that internal control managers who own shares in companies cause a decrease in operational efficiency.

### **The Distinction of the Current Study**

We note from previous studies that they deal with many aspects, including the impact of the characteristics of legal internal auditors on operational efficiency, as in the study; Cho et al., 2015, Cheng et al., 2018, aim to find out whether the internal control over the financial reports affects the operational efficiency of the company. Shin & Park., 2020

deal with the relationship between the characteristics of the director of internal control and the operational efficiency of Korean companies. These studies do not address the impact of the quality of the internal audit function on improving the operational efficiency of companies directly. The exception is Chen et al., 2020 deal with the effect of the quality of the internal audit function on the operational efficiency of Chinese companies. Although, it matches the variables of the current study, it differs from them in terms of measuring the independent and dependent study variables, and in terms of the study sample, also the difference in the environment that distinguishes this study.

## **The Theoretical Framework of the Internal Audit Function and its Relationship to Operational Efficiency**

### **The Concept of Internal Audit Quality**

The quality of internal audit is a topic that have received an attention in accounting thought. It is a tool to achieve accuracy and objectivity in financial information, increase confidence and reliability in financial reports. Given that, internal audit is one of the pillars of successful management as it represents a source of information (Al-Tamimi, 2020). Therefore, attention is directed to the quality of internal auditing to judge the professional performance of internal auditors. Thus, confidence in the reports prepared by internal auditors to help discover cases of fraud and misuse of resources (Ali, 2019).

Badara, & Saidin define it as the outcome of the activities, procedures, tasks and professional practices of internal auditors through a high commitment to internal auditing standards, goals, objectives, responsibilities and policies (Badara & Saidin, 2013).

Behn et al define it as the extent of the auditor's ability to reduce fraud and bias and increase the accuracy of accounting data. The quality of internal audit increases the credibility of accounting information and allows management and shareholders to make more accurate estimates of the company's value. (Behn et al, 2008).

### **The Significance of the Quality of the Internal Audit Function**

The existence of an effective internal audit function within companies is pivotal, as the significance of internal audit quality is represented as follows:

1. **Adding value to companies:** the significance of quality to the internal audit function lies in adding value to and improving the company's operations. It assists management and the board of directors in carrying out their responsibilities, and providing support to stakeholders, that add value which is measured through

monetary gains or cost savings as well as the quality of services that performed by the internal audit function (Botha & Wilkinson, 2019).

2. **Management support:** the high-quality internal audit function plays an important role in providing the information requested by the management, as it is a means of support for management. Thus, internal auditors care about the quality of their work, which increases the management's confidence in their reports with the professional practice of internal auditing (Ali, 2019).
3. **Improving Operational Efficiency:** International internal auditing standards require that the internal audit function play an advisory role to improve the operational efficiency of companies IIA, 2016. The high-quality internal audit function improves the operational efficiency of the company by making strategic recommendations and evaluation of the effectiveness of risk management. (Burton et al., 2012; Carcello et al., 2017).
4. **Audit Committee Support :**Companies can establish a high-quality internal audit function to complement corporate governance. This provides companies with assurance and advisory services that enhance the efficiency of risk management, internal control and corporate governance procedures. In addition, the quality of the internal audit function simplifies operations and makes audit committee operations more efficient, because its role is in line with the responsibilities of the Audit Committee in monitoring financial reports (Alzoubi, 2019).
5. **Reducing the costs of external audit :**There is cooperation and coordination between internal audit and external audit so that it can produce high-quality audits and have economic benefits. Thus, external auditors consider the work of internal audit to help carry out their duties by looking at the level of quality of internal audit functions. Moreover, external auditors can rely on internal audits or participate in them if the internal audit enjoys sufficient objectivity and efficiency. This accreditation save in effort, time and costs (Saputra & Yusuf, 2019).

## Dimensions of the Quality of the Internal Audit Function

The American Institute of Certified Public Accountants AICPA, 1991 identifies the significant and necessary elements to ensure the quality of the internal audit function, which are as follows:

### 1. Efficiency

The internal audit function is effective when internal auditors have sufficient experience, knowledge and skills to perform internal audits with high quality and effectively (Abbott, et al, 2016). It can be efficiency associated with the ability of an individual to perform a function or task properly on the basis of the level of education and professional

experience and the efforts of staff and continuing professional development, and efficiency contribute to improving the effectiveness of internal audit through the auditors ability to perform internal audit function with high quality operations (Baharud-din, et al, 2014).

## 2. Independence

The internal audit function must be independent and perform its work objectively. It has not to be subjected to interference from external parties when carrying out its work and communicating results. Therefore, the independence of the auditor is an important factor in the quality of the internal audit function. Consequently, the internal audit function must be at an adequate hierarchical level inside the company to be able to exercise its responsibilities, and the independence of the internal auditor is achieved only when he submits his reports to the Board of Directors. (Krichene & Baklouti, 2020).

## 3. Quality of Task Performance

Internal audit quality refers to how internal auditors carry out their activities and tasks to evaluate operations according to procedures or a standard (Turetken et al, 2019). The quality of audit performance also refers to the planning, supervision, fieldwork, recording, reporting, findings, recommendations, and follow-up of internal audit activities Endaya & Hanefah, 2013).

## Factors that Motivate Companies to Establish a High-quality Internal Audit Function

There are several factors that motivate companies to establish a high-quality internal audit function, and they can be divided into the following:

- 1. The degree of complexity of the company:** complex companies combine diverse industries and processes. This diversity leads to problems in assembling the resulting information and asymmetry in the information within the company. Thus, these companies have a greater need for a high-quality internal audit function and its services (Dey, 2008). The company becomes more complex and the information and assurance roles played by the internal audit function become increasingly important. It leads to an increased focus on the quality of the internal audit function (Jiang, et al, 2018).
- 2. Providing advisory services to the Board of Directors:** The Board of Directors is one of the main stakeholders to which the internal audit function provides its services. It provides information to oversee management's behavior, so the quality

of the internal audit function must be developed in response to this request (Jiang et al., 2018).

- 3. Audit Committee Support:** audit committees are responsible for direct oversight of the internal audit function (Anderson et al., 2012). Since this committee is directly responsible for overseeing the practices of the internal audit function, thus the quality of the internal audit function is affected by its characteristics. The audit committee is associated with the high-quality internal audit function by three points (DeZoort et al., 2002).

The first: the audit committee has interactions with internal auditors and it is likely that a close relationship will be established with the internal audit function. This relationship improves quality and strengthens the governance capabilities of both parties. (Cohen, et al, 2010). The second; the audit committees review the performance of the internal audit function in a timely manner, which in turn facilitates faster detection of errors and treatment of deficiencies in the internal audit function. (Hoitash et al, 2009). Finally, audit committee members are more motivated to establish a high-quality internal audit function in order to obtain high-quality and timely information to fulfill their oversight responsibilities (DeZoort et al, 2002).

- 4. CEO's Authority:** CEOs have conflicting motives for the high-quality internal audit function due to the dual role it plays. The CEO relies on this role to provide oversight, advisory and risk management services, which provides an incentive to create a high-quality internal audit function. Conversely, it restricts the CEO's ability to obtain personal gain, exposes his opportunistic behavior, and prevents profit manipulation and fraud. Therefore, the CEO's impact on the quality of the internal audit function depends to a large extent on his need for advisory services from the internal audit function and his ability to resist oversight by the internal audit function internal audit (Ege, 2015)
- 5. Raising operational efficiency:** In many companies, operational efficiency can be enhanced through an operational audit that focuses on issues related to risk-based internal auditing operational effectiveness and efficiency (Cho et al., 2015).
- 6. Competition:** Motivates companies to develop the quality of the internal audit function by using control to control costs, and assess whether production, investment and financing activities which are operating according to expectations, because competition is pressure, risk and uncertainty, which increases the company's demand to ensure that risk management. The company is operating effectively, the need for timely information and adaptability in highly competitive companies requires that companies implement effective internal control to respond effectively and quickly to a changing environment and address threats and opportunities in the competitive environment (Jiang, et al, 2018).



## The Concept of Operational Efficiency

Operational efficiency is the company's ability to convert its resources into revenue better than its competitors (Cho, et al, 2015).

It is defined by Kwon et al., 2019 as the overall capacity of the company to implement systematic procedures to improve performance, reflecting the processes best practices based on efficiency and organizational processes sound (Kwon et al., 2019).

## Sixthly. The Significance of Operational Efficiency in Companies

Operational efficiency is one of the main indicators by which one can identify how well companies use the available resources efficiently. Therefore, the significance of operational efficiency stems from the following:

1. Operational efficiency is a factor affecting profitability and sustainability, companies must use their resources efficiently to survive and thrive, (Osazefua, 2019).
2. Operational efficiency in addition to strategic flexibility is a necessary condition for sustainable competitive advantage (Kortmann et al., 2014).
3. Operational efficiency is a proxy indicator of a company's operational excellence for converting various resources into value-added outputs (Kwon et al., 2019).
4. Operational efficiency plays an important role in improving the company's current and future performance. Operational efficiency can be used as a substitute for competitive advantage, which affects the company's current profitability and potential future performance (Gill et al., 2014).
5. Competition requires continuous monitoring of the operational performance of companies. Thus, company managers must compare the performance of their operations with the best performance to be able to know where they are compared to competitors. They have to measure the operational performance of their operations strategies in an appropriate manner (Abbasi & Kaviani, 2016).

## Components of Operational Efficiency

The components of operational efficiency are as proposed Farrell in 1957 the following:

1. **Relative efficiency** :the relative efficiency of decision-making units (DMUs). It is the sum of the weighted outputs of a unit divided by the total weighted inputs of the unit itself. It is a measure of efficiency, whether technical or specialized efficiency of two or more units within one sector under the assumption based on the unit of

- professional specialized work of the units under study. These units work in the same sector and engaged in the same activity (Hassan, 2019).
2. **Technical efficiency:** reflects the ability of companies to reduce the use of inputs to produce a certain amount of output by reducing wastage of inputs. It is the use of the least amount of inputs, regardless of their cost, and increasing outputs regardless of their price (Arefjevs, 2015).
  3. **Allocative efficiency:** reflects the ability of companies to use the appropriate combination of inputs for the purpose of reducing costs. Yet, the aspect of output, it means a good selection of the appropriate combination of outputs for the purpose of increasing profits (Arefjevs, 2015).

### **The Relationship of the Quality of the Internal Audit Function to the Performance of the Company**

The quality of internal audit plays an important role in protecting companies from the risk of collapse, which is the goal that all companies pursue. It means that companies whose operations are audited by competent internal auditors face fewer risks (Chae et al., 2020). The internal audit is also considered one of the important aspects that contribute to add value to companies by improving the process of monitoring and follow-up for the purpose of improving outputs. Internal audit is an important tool to maximize business results for companies, and the efficiency of the internal audit function has a significant positive impact on adding value to work and improving performance companies (Hazaea et al., 2020). The function of effective internal audit helps to improve the company 's operations as an activity independent helps the company achieve its objectives through the use of risk management, internal control and efficiency of the governance and effectiveness of a well-structured approach. The ultimate goal of internal audit is to achieve better returns for the company by improving its performance, reduce overhead, protect the company from potential losses that could affect the company's financial performance, restrict better earnings management, and improve the quality of financial reporting (El Gharbaoui & Chraibi, 2021).

### **The Relationship of Internal Audit Quality with the Efficiency and Effectiveness of the Company's Management**

The company's management is responsible for establishing and maintaining effective internal control systems, such as structures, activities, processes, and systems that assist the company's management. They effectively mitigate the risks facing the achievement of the company's goals. The management also bears this responsibility on behalf of the company's shareholders, which are accountable to before a supervisory body (such as the board of Directors and the audit Committee and elected representatives (Al Matarneh,

2011). On the other hand, the internal audit function acts as a valuable source of information for managers and plays a crucial role in supporting their decision-making. Accordingly, the role of the internal audit function helps companies achieve better operational performance stems from the useful and relevant information provided by the internal audit function to managers. In addition, it provides operational and strategic advice, given the internal auditors' deep knowledge of the organizational structure and operations of companies. Therefore, the services provided by the internal audit function add value to companies because such services can be a reliable source of useful information for managers when making decisions operational and strategic. Managers depend on and are influenced by the operational recommendations of internal auditors, especially if internal auditors are within the company (Jiang et al., 2020). On the other hand, we must not forget the management's support for the internal audit department, because this support will affect the quality and effectiveness of internal auditing (Alzoubi, 2019).

### **The Effect of the Internal Audit Quality Function on Operational Efficiency**

Internal auditors improve the quality of the internal audit function, through their understanding of the company's strategic priorities, and provide them with insight into the areas in which they can add maximum value to the company as a whole. The efficient and effective use of limited resources focused on (Pitt, 2014). Many studies show that a high-quality internal audit function directly improves the operational efficiency of companies by making strategic recommendations and evaluating the effectiveness of corporate risk management (Burton, et al, 2012; Carcello, et al, 2017). Other studies show that any weakness in the quality of the internal audit function would adversely affect the operational efficiency of companies (Feng et al, 2015; Cheng, et al, 2018). Therefore companies employ internal private auditors to carry out financial and operational audits. They give them more roles substantially, mainly due to the increase in the size and complexity of many companies. Internal auditors spend all their time in one company, they have more knowledge of a company's operations than external auditors. This type of knowledge can be critical to effective corporate management (Arens et al., 2016). Additionally, the framework provides professional practices for the IIA as in the following definition of internal audit (AII, 2017):

Internal audit is an independent objective assurance and advisory activity designed to add value and improve company operations, which helps the company achieve its objectives by providing a systematic and disciplined approach to assessing and improving the effectiveness of risk management, control and governance processes.

The researcher notes from that the role of internal auditors is variable. They are expected to provide value to the company by improving operational effectiveness, in addition to performing traditional responsibilities, such as: reviewing the reliability and integrity of information, ensuring compliance with policies and regulations, and protecting assets from damage and loss.

The integrated framework for corporate risk management issued by (COSO). The internal audit function has main supporting responsibilities to help companies achieve strategic and operational goals. It is possible that all activities within the company will be within the scope of the internal auditor's responsibility. In addition, one of the internal control objectives relates to the effectiveness and efficiency of the company's operations, including performance objectives operational, financial, and asset loss protection (COSO, 2013).

Auditing standards and empirical studies show that efficiency and independence are among the significant dimensions in the quality of the internal audit function (AICPA, 1991; IIA, 2016). The study conducted by Chen et al., 2020 emphasizes that these two dimensions have different effects on the operational efficiency of companies, as follows:

### **1. The Efficiency of the Internal Audit Function and its Role to Improve Operational Efficiency**

Chen, et al, 2020 note that the efficiency of the internal audit function works to improve the operational efficiency of the company for the following ways (Chen, et al, 2020):

1. More efficient internal auditors (i.e. those with a higher level of education and experience) are better able to obtain and analyze relevant information (Lai & Liu, 2018). Thus, they are more likely to identify opportunities to improve the operational efficiency of companies by assessing potential risks, enhancing cost savings or increasing the operating effectiveness of the company.
2. More efficient internal auditors can better respond to managers' needs and make constructive recommendations to support decision making.

Chen, et al, 2020 also add that the quality of the internal audit function is positively related to the operational efficiency of the company. The efficiency of the internal audit function improves the operational efficiency of the company in the presence of effective corporate governance. It can improve the operational efficiency of the company directly or indirectly by enhancing the quality internal control of the company (Chen, et al, 2020).

Cho et al., 2015 note that internal auditors who interact frequently with key employees within the company will have a greater chance of discovering problems. This helps them to build relationships with employees and in uncovering critical problems or obstacles to improve operational efficiency. A full-time internal auditor will have a more effective advisory role and the ability to enhance operational efficiency compared to a non-full-time auditor. Accordingly, the full-time status of internal auditors will have a positive impact on operational efficiency (Cho et al., 2015).

For Hutchinso & Mat Zain who also indicated that the internal auditor must have professional qualifications and previous experience if he is to lead a good audit, as the quality and characteristics of the audit team are related to his ability to suggest improvement of operational efficiency, internal control systems, risk management, and financial issues, and previous experience is important for auditors. Internal audit staff, as many control provisions are subject to personal judgment, and administrative action may have wide-ranging implications. Thus, in the absence of objective standards, internal audit staff without prior audit experience may not understand the wide range of current and potential problems. They do not have the skills to solve these problems, and accordingly, an internal audit that has a greater degree of training and experience is more able to provide a guarantee of the effectiveness and efficiency of regulatory controls in alignment with organizational strategies. The function of high-quality internal audit significantly affects the quality and control of the internal control system. In addition, internal auditors will contribute more to financial statement audits when they have a larger proportion of internal audit staff. Those with previous experience in accounting and auditing, effective internal audits are more likely to detect and prevent fraud (Hutchinson & Mat Zain, 2009).

As for the negative effect of efficiency, Cheng et al., 2018, the inefficient internal audit function has a negative impact on the operational efficiency of the company, as it can lead to wrong control reports, to sub-standard operational decisions because managers rely on these reports to make operational decisions. For example, an insufficient internal audit function can affect negatively the company's ability to forecast sales, which in turn negatively affects production decisions for the next period, which in turn leads to inaccurate information about unit cost, poor cost control, and then lower operational efficiency (Cheng et al., 2018).

To address this problem, the control reports must be of good quality in order to improve the performance efficiency of different companies. The quality of these reports is achieved through the availability of the following criteria:

1. Professional standards: The International Standards for the Professional Practice of Internal Auditing are the standards and rules by which the operations and services of

the internal audit function can be evaluated. Given that adherence to them leads to the achievement of the objectives of this job, because these standards have been developed on the basis of a clear theoretical framework, which defines the basic principles that governing the audit profession (Ibrahim, 2016).

2. Regulatory standards: Regulatory standards play a role as one of the criteria for examining and evaluating compliance with policies and procedures that would facilitate the process of resource allocation for the purpose of achieving corporate efficiency improvements. (Robert, 2009).

The researcher concludes that the efficiency dimension of the internal audit function affects the operational efficiency of companies. This effect is either positive or negative. As for the positive impact, it is in one of the following two forms:

- a. Direct, by assessing corporate risks, saving costs, and increasing corporate operational effectiveness.
- b. Indirectly, by making recommendations to support decision-making, or by providing advisory services to management, and provide high-quality control reports.

### **The Independence of the Internal Audit Function and its Role to Improve Operational Efficiency**

For internal auditors, independence refers to the ability to do their work freely and objectively without interference from management or other company employees. Direct access and reporting to the audit committee rather than management improves the independence of the internal audit function. Differences are reflected in the ability of the internal audit function to maintain independence in the internal audit reporting environment, access to the board of directors and the audit committee, and direct access to data (Raiborn et al., 2017). The independence of the internal audit function should improve the quality of financial reporting and the efficiency of internal control (Ege, 2015). Both of which can increase operational efficiency (Cheng, et al, 2018). In view of the increasing role of the high-quality internal audit function in companies, independence has gained great attention as one of the specific dimensions of the quality of the internal audit function, which provides a guarantee of the added value and advisory services that are provided (Christopher et al., 2009). As can independent internal auditors can play an important role in improving operational efficiency by providing recommendations or advice on the effectiveness of the internal control system to achieve better operational performance and the achievement of quality in financial reporting (Chen, et al, 2020).

What was presented in the previous paragraphs about the quality of the internal audit function and its impact on the performance of companies, the efficiency of the

performance of corporate departments and operational efficiency, the researcher notes that quality, performance and value are interrelated concepts. Quality processes can improve performance and increase value, and performance improvements can increase quality. All three elements are important to ensure increased operational efficiency.

## The Empirical Study

### Community and Sample Research

The study represents the community of Iraqi listed companies in the Iraqi market and published security reports and statements of financial in electronic Authority Iraq Website Securities. The study sample consists of industrial and private companies and banks listed in the Iraq market for financial markets. They have been selected as they have an influential role and vital in building the Iraqi local economy. This sample is represented by thirteen banks and ten industrial companies, from 2012 to 2019, for eight years. The recorded observations would be 184 views, and the condition set in determining the study sample is the availability of data for the period of the study sample continuously and without interruption. The banks' cooperation and companies with the researcher to obtain the data necessary to measure the variables. Therefore, the rest of the sectors were excluded due to the lack of the above required conditions. The important of which is the provision of data for the specified study period, and Table (1) shows the companies and banks sample of the study.

**Table 1 Study sample companies and banks**

No.	Bank name	No.	Company's name
1	Al-Ahly Al-Iraqi	1	Iraqi carpets and furnishings
2	Assur	2	National Chemical and Plastic Industries
3	Gulf Commercial	3	Pepsi
4	Middle East	4	Baghdad for packaging materials industry
5	Baghdad	5	Al-Mansour Pharmaceutical
6	Babylon	6	Iraqi Dates Manufacturing and Marketing
7	Iraqi investment	7	Al-Kindi for the production of veterinary vaccines and medicines
8	Al-Iatiman	8	National Metal Industries and Bicycles
9	Al-Mansour	9	Modern Sewing
10	Sumer	10	Production Of Ready-Made Garments And General Trade
11	Across Iraq		
12	Al-mutahid for Investment		
13	Iraqi Commercial		

Source: Table prepared by researchers

## The Operational Efficiency of the Study Sample

Using the data envelope analysis technique, the operational efficiency of the study sample is determined from banks and industrial companies (Annex 2 shows the operational efficiency levels for 184 observations representing the study sample), and Table (2) shows the average levels of operational efficiency for the sample.

**Table 2 Operational Efficiency of the Study Sample**

No.	Bank name	Average operational efficiency	No.	The Company's name	Average operational efficiency
1	Al-Ahly Al-Iraqi	0.816	14	Iraqi carpets and furnishings	0.477
2	Ashur Bank	0.680	15	National Chemical and Plastic Industries	0.386
3	Commercial gulf	0.834	16	Pepsi	0.650
4	Middle East	0.567	17	Baghdad for packaging materials industry	0.114
5	Baghdad	0.669	18	Al-Mansour Pharmaceutical	0.717
6	Babylon	0.877	19	Iraqi Dates Manufacturing and Marketing	0.335
7	Iraqi investment	0.807	20	Al-Kindi for the production of veterinary vaccines and medicines	0.264
8	Al-Mansour	0.931	21	National Metal Industries and Bicycles	0.230
9	Al-Iatiman	0.517	22	modern sewing	0.489
10	Sumer	0.860	23	Production of ready-made garments and general trade	0.728
11	A Cross Iraq	0.573			
12	Al Mutahid for Investment	0.709			
13	Iraqi Commercial	0.694			
banking sector		0.733	Industrial companies sector		0.4393

Source: The table is prepared by researchers based on the outputs of statistical analysis Referring to Appendix 2, it is noted that there are three models of efficiency: Efficiency according to fixed returns (Constant Return Scale: CRS), and efficiency according to variable returns (Variable Return Scale: VRS), the volumetric efficiency (Scale of



efficiency. Regarding efficiency; fixed volume returns, the bank or company is efficient compared to other banks or companies if it achieves an efficiency equal to (1) true. Otherwise it is considered incompetent, as the case for efficiency according to variable volume returns, but if the efficiency according to fixed volume returns is greater efficiency according to the variable returns to scale. This indicates that banks or companies do not work well in generating profits, but they are working to improve it. Yet, if the efficiency is equal according to (CRS) with efficiency according to (VRS) the result is equal to (1) true. Then, the volumetric efficiency is in the case of optimal volume returns, because it results from dividing the efficiency (CRS) on (VRS), but if the quotient result is less than that, this indicates that the bank or company is inefficient. In the case of increasing or decreasing yields, and in the event of decreasing yields, banks or companies must reduce input resources in order to improve performance and efficiency, either in the case of increasing yields, the input resources must be increased in order to increase the size of the scope of work and operation.

As it is noted in Table (8) that the highest average efficiency from (2012-2019) which appeared at Al-Mansour Bank and amounted to (0.931). The lowest average efficiency for the same period appeared at Baghdad Company for the manufacture of packaging materials, which amounted to (0.114) only. It is also noted in Table (8) that the banking sector is more efficient than the industrial sector, where the average efficiency of the banking sector as a whole is (0.733). Yet, the average efficiency of the industrial sector as a whole is (0.4393) which is less than the banking sector.

### Descriptive Analysis

Table (3) shows the arithmetic means, standard deviation, and coefficient of variation for the study variables

**Table 3 Descriptive analysis of the study variables**

Variables	Arithmetic Mean	Standard Deviation	Highest Value	Lowest Value	Variation Coefficient
Qualification of Personnel	0.80250	0.253725	1	0	0.316
Wages of Internal Auditors	0.0017352	0.00245262	0.01116	0.00004	1.413
Professional Certifications	0.20	0.398	1	0	1.990
Annual Training Courses	0.4	0.491	1	0	1.228
International Internal Audit Standards Courses	0.20	0.402	1	0	2.010
Operational Efficiency	0.605826	0.2854285	1	0.0390	0.471

Source: The table was prepared by the researcher based on the outputs of the statistical analysis

The above table includes some descriptive statistical data for the study variables, including the maximum and minimum values, the arithmetic mean and the standard deviation. The results can be reviewed in the following points:

1. It is noted from Table (10) that there is a large dispersion of data (the average wages of internal auditors, professional certificates, the number of annual training courses, and courses with international internal auditing standards) in terms of the coefficient of variation and the relatively high standard deviation. While there was greater consistency in operational efficiency and qualification scale for members of the internal audit department.
2. The arithmetic mean indicates a decrease in the operational efficiency of the listed Iraqi companies. As for the measures of the quality of the internal audit function, we note a decrease in the arithmetic mean in all measures except for the qualification scale for the members of the audit department. The study of the annual courses provides the Internal Audit Department, as well as the lack of interest in the courses related to international internal auditing standards, and the researcher notes, by collecting data. There are few auditors who have professional certificates that enhance their academic certificates. Therefore, this becomes clear through the analysis of these data where the average scale of professional certificates was (0.20) only. It indicates a significant decrease in this scale, and the important observations that the researcher noticed during personal interviews with managers of internal audit departments in companies and banks is the lack of staff of the internal audit department compared to the large numbers owned by these companies and banks of employees. This is confirmed by the results of the statistical analysis, where the average measure of wages for internal auditors was (0,0017352) only, which is the lowest quality measure of the internal audit function.
3. As for the highest and lowest value, the highest value for the dependent variable was (1) and its lowest value was (0.0390), which indicates a large discrepancy in efficiency. As for the independent variable, its highest value was (1), and its lowest value was (0)

### **Hypothesis Testing of the Relationship**

In this part, the researcher presents the main hypothesis on which the research is based, the results, the statistical treatments that were conducted on the collected data, the analysis of these results and the discussion of the relationships between the study variables. Thus, this paragraph includes one main hypothesis:

**(H1) The first main hypothesis :**there is a significant relationship between the internal audit function in all its measures with the operational efficiency of companies and banks which are the study sample.

Using the Pearson correlation coefficient, the hypothesis of the relationship between the measures of the internal audit function and the operational efficiency of the study sample ; companies and banks was tested, and table (4) shows the matrix of the relationship between those variables.

**Table 4 The relationship between the study variables**

The independent variable (the quality of the internal audit function)	Dependent Variable (Operational Efficiency)	
	Pearson Correlation	Sig
Qualification of audit department personnel	**0.198	0.007
average wage	**0.472-	0.000
professional	0.134	0.069
Annual Training Courses	**0.387	0.000
International Internal Audit Standards Courses	**0.253	0.001

Source: Table prepared by researchers

The sign (\*) indicates that there is a statistically significant relationship at the level (0.05) or less between the two variables.

The sign (\*\*) indicates that there is a statistically significant relationship at the level (0.01) or less between the two variables.

The relationship matrix in Table (11) shows that there is a significant relationship between operational efficiency and all measures of the internal audit function, except for the professional scale ,as the relationship is not significant. Internal audit and operational efficiency is the relationship between the variable of annual training courses for the internal audit department and operational efficiency, followed by the relationship between the variable of courses for the international internal audit standards for the internal audit department and operational efficiency. It is followed by the relationship between the qualification variable for members of the internal audit department and operational efficiency, all of which were significant at the level of Significance (0.01). This indicates the existence of a direct correlation between the mentioned independent variables and the dependent variable (operational efficiency) .It shows that these variables have a positive impact on operational efficiency if companies increase the number of annual training courses and courses for international internal auditing standards, as well as if the number of auditors who have bachelor's degrees increases.

While there was a negative and moral relationship at the level of significance (0.01) between the average variable of internal audit department wages and operational efficiency, which indicates the existence of an inverse relationship, that is, the higher the average wages of the internal auditors, the lower the operational efficiency.

Finally, the researcher notes that there is no relationship between the professional variable and operational efficiency, as the relationship was positive and non-significant with a significance level equal to (0.069), which indicates that there is no significant relationship of the professional variable with operational efficiency and therefore no correlation, and based on the above, so the main hypothesis is accepted.

### Hypothesis Test of Effect

In this part, the researcher presents the main impact hypotheses on which the study is based, the results of the statistical treatments are presented that are conducted on the collected data, analyzing these results and discussing the effect between the study variables. Therefore, the paragraph includes two main hypotheses, which are as follows:

**H2 The second main hypothesis :**There is a significant effect of the internal audit function on the operational efficiency of the study sample; companies and banks.

Five sub-hypotheses emerge from it:

**(H2. 1) The first sub-hypothesis :**There is a significant effect of the qualification scale for the members of the Internal Audit Department on the operational efficiency of the study sample; companies and banks.

A simple linear regression equation has been prepared to estimate the operational efficiency in terms of the qualification scale for the members of the internal audit department, to determine the effect of the latter on operational efficiency, and table (5) shows the regression equation for the results of the impact test.

**Table 5 Regression equation for the effect of qualification of internal audit personnel on operational efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	Values (T) (Sig.)	Values (F) (Sig.)	( $R^2$ )	( $R^2$ ) the average
Qualification for personnel	0.427	0.222	2.720 (0.007)	7.401 (0.007)	0.039	0.034

Source: Table prepared by researchers based on the results of statistical analysis

Indicative (F) indicates the validity of the regression model while indicating significant (T) on the impact of the qualification of the internal audit department members and operational efficiency. While the value of beta (0.222) indicates that the effect is positive, and the value of the coefficient of determination (0.039) indicates that the qualification of the internal audit department members explains about (4%) of the changes taking place in operational efficiency, while other changes are due to other factors that are not apparent in the current model, and this is consistent with the study of) Chen et al., 2020), it must accept the first sub-hypothesis.

**(H2. 2) The second sub-hypothesis :**There is a significant effect of the average wages of internal auditors on the operational efficiency of companies and banks, the study sample.

A simple linear regression equation has been prepared to estimate operational efficiency in terms of the average wages of internal auditors, to determine the effect of the latter on operational efficiency, and table (6) shows the regression equation for the results of the impact test.

**Table 6 Regression equation for the effect of average wages of internal auditors on operational efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	Values (T) (Sig.)	Values (F) (Sig.)	(R <sup>2</sup> )	(R <sup>2</sup> ) the average
Qualification for department personnel	0.701	54.877-	7.214- (0.000)	52.040 (0.000)	0.222	0.218

Source: Table prepared by researchers based on the results of statistical analysis

Indicative (F) shows the validity of the regression model while indicating significant (T) on the impact of the average wages of internal auditors for the Internal Audit Department on operational efficiency. While the beta value (-54.877) indicates that the effect is negative, and the value of the coefficient of determination (0.222) indicates that the average wages of the internal auditors for the internal audit department explains its rate (22%). Approximately, the changes in operational efficiency, while other changes are due to other factors that are not apparent in the current model, and this is consistent with the study of (Chen et al., 2020.) Accordingly, the second sub-hypothesis is accepted, but the effect is significant and negative, that is, the higher the average wages of the internal auditors, the lower the operational efficiency of the study sample.

**H2. 3The third sub-hypothesis :**There is a significant effect of professional certificates on the operational efficiency of the study sample companies and banks.

A simple linear regression equation has been prepared to estimate operational efficiency in terms of professional certificates, to determine the effect of the latter on operational efficiency, and table (7) shows the regression equation for the impact test results.

**Table 7 Regression equation for the effect of professional certificates on operational efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	Values (T) (Sig.)	Values (F) (Sig.)	(R <sup>2</sup> )	(R <sup>2</sup> ) the average
Certifications of professionals	0.587	0.096	1.826 (0.069)	3.335 (0.069)	0.018	0.013

Source: The table prepared by researchers based on the results of statistical analysis.

Indicative (F) shows the invalidity of the regression model while indicating significant (T) the lack of impact of the professional certificates of the Internal Audit Department on operational efficiency. Yet, the value of beta (0.096) indicates that there is no negative or positive impact, due to the lack of morale (T) the value of the coefficient of determination (0.018). It indicates that the professional certificates of the Internal Audit Department explain approximately (2%) of the changes in operational efficiency, while other changes are due to other factors that are not apparent in the current model, and this differs from the study of (Chen et al., 2020) . Therefore, the third sub-hypothesis is rejected.

**(H2. 4) Fourth sub-hypothesis :**There is a significant effect of the number of annual training courses on the operational efficiency of the study sample companies and banks.

A simple linear regression equation was prepared to estimate operational efficiency in terms of annual training courses, to determine the effect of the latter on operational efficiency, and table (8) shows the regression equation for the results of the impact test.

**Table 8 Regression equation for the effect of annual training courses on operational efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	Values (T) (Sig.)	Values (F) (Sig.)	(R <sup>2</sup> )	(R <sup>2</sup> ) the average
Annual Training Courses	0.517	0.225	5.659 (0.000)	32.025 (0.000)	0.150	0.145

Source: The table was prepared by researchers based on the results of statistical analysis.

Indicative (F) designates the validity of the regression model while indicating significant (T) on the impact of the annual training courses of the internal audit department on

operational efficiency. The value of beta (0.225) indicates that the effect is positive, and the value of the coefficient of determination (0.150) indicates that the annual training courses of the internal audit department explain approximately (15%) of the changes in operational efficiency. Yet, other changes are due to other factors that are not apparent in the current model, and this is consistent with the study (Al-Tamimi, 2020) (Al-Janabi, 2019). Therefore, the fourth sub-hypothesis is accepted, that is, there is a significant effect and this effect is positive.

**(H2. 5) The fifth sub-hypothesis :** There is a significant effect of the courses according to the international internal auditing standards on the operational efficiency of companies and banks, the study sample.

A simple linear regression equation has been prepared to estimate operational efficiency in terms of the cycles of international internal auditing standards, to determine the effect of the latter on operational efficiency, and table (9) shows the regression equation for the impact test results.

**Table 9 Regression Equation of the Impact of International Internal Audit Standards Cycles on Operational Efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	Values (T) (Sig.)	Values (F) (Sig.)	(R <sup>2</sup> )	(R <sup>2</sup> ) the average
International Internal Audit Standards Courses	0.570	0.180	3.534 (0.001)	12.488 (0.001)	0.064	0.059

Source: The table was prepared by researchers based on the results of statistical analysis.

Indicative (F) specifies the validity of the regression model while indicating significant (T) on the impact of the courses in the international internal auditing standards of the internal audit department on operational efficiency. The value of beta (0.180) indicates that the effect is positive, and the value of the coefficient of determination (0.064) indicates that the courses with the international internal auditing standards of the internal audit department explain (6%) Almost from changes in operational efficiency, while other changes are due to other factors that are not apparent in the current model.

**(H3) The third main hypothesis:** The impact of internal audit function measures on the operational efficiency of the study sample; companies and banks.

To test this hypothesis, a multiple regression equation was developed to estimate the operational efficiency in terms of the five measures of the internal audit function (the qualification scale for department members, the average wages of internal auditors, professional certificates, the number of annual training courses, courses with international internal audit standards), to reach the extent of the variation in the impact of the latter on operational efficiency. In this data analysis process, the multiple regression method was used (Multiple Regression Backward) based on the exclusion of the least influential dimensions in the dependent variable. Table (10) shows the results of testing the impact of the five measures of the internal audit function on operational efficiency.

**Table 10 The impact of internal audit function measures on operational efficiency**

Dimensions	constant parameter ( $0\beta$ )	regression coefficient ( $\beta$ )	(T) Values (Sig.)	Values (F) (Sig.)	(R <sup>2</sup> )	(R <sup>2</sup> ) the average
International Internal Audit Standards Courses	0.633	43.240-	5.092 - (0.000)	31,171 (0.000)	0.256	0.248
		0.122	2.869 (0.005)			

Source: The table was prepared by researchers based on the results of statistical analysis.

Table (10) represents a summary of the results of several tests carried out during the regression equation (Backward). The test shows four models of the regression equation, the last of which was after excluding some dimensions that have a non-significant effect on operational efficiency and only the dimensions that have a significant effect, as it is noted that the effect of dimensions varies according to the models that have been tested, and the summary of this table is in the following:

1. Signify moral (F) that the model is correct and the regression equation is correct in estimating the dependent variable across the independent.
2. Denotes moral (T) the existence of a significant impact of the variable average wages of internal auditors and the variable number of annual training courses for the internal audit department on operational efficiency.
  - a. The value of the beta regression coefficient (43.240-) for the variable average wages for internal auditors indicates that the effect is negative. Whenever the average wages of internal auditors increases, the operational efficiency of the study sample decreases. While the value of the beta regression coefficient (0.122) for the variable number of annual training courses for the audit department internal that a positive effect. Any increase in the number of annual training courses with increased operational efficiency of the study sample.



- b. The value of the adjusted coefficient of determination (0.248) indicates that the two variables explain approximately (25%) of the changes in operational efficiency.

According to results that confirm the validity of the hypothesis, the third main hypothesis must be accepted.

## **Conclusions and Recommendations**

### **Conclusions**

The theoretical and practical study reach a number of conclusions, which can be divided into conclusions related to the theoretical side and conclusions specific to the practical side.

#### **1. Conclusions of the theoretical study**

The researcher reached several conclusions from theoretical study, the important of which are the following:

- a. There is a clear difference in the views of researchers and writers on the concept of internal audit quality.
- b. The high-quality internal audit department within the company improves operational efficiency by managing company risks, reducing fraud opportunities, discussing strategic issues within the company, participating in decision-making, and providing necessary advice by attending board meetings frequently .
- c. Efficiency and independence are the important elements that make internal audit high quality.

#### **2. Conclusions of the Practical Study**

In the practical study, the researcher reach several conclusions, the important of which are the following:

- a. The average operational efficiency of the industrial companies sector decreased during the study period from 2012 to 2019, compared to the banking sector.
- b. The results of the descriptive analysis show that there is a large dispersion of data (average wages of internal auditors, professional certificates, number of annual training courses, and courses for international internal auditing standards) in terms of the coefficient of variation, and the relatively high standard deviation, while there

- was greater consistency in operational efficiency and qualification scale. For members of the internal audit department.
- c. The arithmetic mean indicates a relative decrease in the operational efficiency of the listed Iraqi companies, as well as the case with regard to the quality measures of the internal audit function. The arithmetic mean decreased in all measures except for the qualification scale for the members of the audit department, and perhaps the reason for the decline is due to the lack of interest in annual and special courses. According to international internal auditing standards, and lack of auditors who have professional certificates, where the average scale of professional certificates was (0.20). Among the reasons is also the lack of staff of the Internal Audit Department compared to the large numbers of employees owned by these companies and banks, where the average scale of auditors wages internal audit function (0.0017352) only, which is the lowest measure of the quality of the internal audit function.
  - b. There is a significant relationship between operational efficiency and all measures of the internal audit function, except for the measure of professionalism, as the relationship was not significant. The relationship between positive and negative, and from the strongest to the weakest, as the strongest positive relationships were the relationship between the variable of annual training courses for the internal audit department and the operational efficiency followed by the relationship between the cycles variable of international internal auditing standards and operational efficiency, followed by the relationship between the qualification variable for members of the internal audit department and operational efficiency. All of which were significant at the level of significance (0.01), which indicates the existence of a correlation relationship. While there was a negative and moral relationship at the level of significance (0.01) between the variable average wages of the internal audit department and operational efficiency. It indicates the existence of a correlation relationship, and finally the researcher notes that there is no relationship between the variable of professionalism and operational efficiency as the relationship was positive and not significant with a level. The significance is equal to (0.069), which indicates that there is no significant relationship for the occupational variable with operational efficiency, and therefore there is no correlation.

## Recommendations

The previous results that were reached, the researcher recommends the following:

1. The necessity of paying attention to the staff of the Internal Audit Department in the two sectors, especially in the industrial sector, because of the role of these two sectors in reviving the economy in the country.

2. Paying attention to training and development courses and increasing their preparation and specialization, as they contribute to increase the efficiency of the internal audit department personnel.
3. Employing new employees who have the qualifications, professional certificates and sufficient experience in the field of control and internal auditing, in order to increase the efficiency of this department, increase the chances of discovering errors, fraud, and face the risks that companies may face in the future, and thus increase operational efficiency.
4. Increasing the number of employees of the internal audit department, especially in the industrial sector, because of the large shortage in the number of employees, as well as in order to divide the work among them so that an employee is not alone in completing an entire process, and thus this increase in numbers and this division of work leads to an increase in the efficiency and quality of internal audit.
5. Conducting more studies that highlight the importance of high-quality internal auditing within companies, and its important role in protecting corporate resources from waste and abuse, increasing the volume of outputs generated, and thus raising operational efficiency.
6. Conducting a future study and for another period of time later and for the same sample to see the results and the extent to which companies have developed and increased interest in the quality of the internal audit function. This development reflects interest to improve the operational efficiency of these companies.

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