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A PROPOSED MODEL FOR DETERMINING THE LEVEL OF TRANSPARENCY IN ACCOUNTING DISCLOSURE IN LIGHT OF THE DEGREE COMPLEXITY OF FINANCIAL REPORTS AND ITS IMPACT ON THE EFFICIENCY OF FINANCIAL MARKETS: AN APPLIED STUDY ON A SAMPLE OF BANKS LISTED ON THE IRAQ STOCK EXCHANGE

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Abstract

The aim of this research is to propose a statistical model to predict the optimal levels of transparency in accounting disclosure in light of the degree of complexity in financial reports in order to achieve the highest level of financial market efficiency through an optimal balance between the level of transparency in accounting disclosure and the degree of financial reporting complexity, rather than relying on transparency in isolation. The study focuses on a sample of 18 banks listed on the Iraq Stock Exchange over the period 2016-2023, enabling these banks and other stakeholders to estimate the optimal levels of transparency in accounting disclosure and the complexity of financial reports. The independent variable (transparency of accounting disclosure) was measured using the (S&P) index, while the mediating variable (complexity of financial reports) was measured using the quantity of disclosure approach, specifically the number of pages in the published financial reports of the banks in the research sample. The dependent variable (efficiency of financial markets) was measured using four sub-variables: (the ISX60 index, trading volume, number of shares traded, and market capitalization). These sub-variables were based on the annual reports published by the Iraqi Securities Commission, the regulatory body for the Iraq Stock Exchange. To test the research hypotheses, cubic regression analysis was used using two software programs (EasyFit-V. 5.5) and (SPSS V. 27). The research concludes proposing four statistical models to determine the level of transparency in accounting disclosure in light of the complexity of financial reports for the banks in the study sample to achieve the highest level of financial market efficiency. Therefore, Financial market efficiency is achieved through a balance between the transparency of accounting disclosure and the complexity of financial report. The research recommends adopting the proposed models (ISX60, trading volume, number of shares, market capitalization) to achieve the highest level of financial market efficiency through determining the optimal levels of transparency in accounting disclosure in light of the complexity of financial reports by Iraqi banks. Thus, these models combine transparency and complexity (XM)

as a diagnostic and predictive tool for evaluating financial market efficiency and can be used to estimate the impact of any change in the level of transparency or complexity before its actual implementation.

Keywords: Accounting Disclosure, Complexity of Financial Reports, Efficiency of Financial Markets, Transparency.

1. INTRODUCTION

In recent years, interest in transparency and disclosure has grown, given investors' heavy reliance on the information published and disclosed by economic entities. Accounting disclosure is a fundamental function of accounting, serving as a cornerstone principle in financial reporting. This principle emphasizes the necessity for financial reports to include all relevant financial and other important information pertaining to the entity's activities, ensuring the benefit of other stakeholders. The importance of accounting disclosure stems from the diverse and numerous entities that utilize financial information. In contrast, the complexity of financial reports presents a significant challenge for both economic entities and investors. While complex financial reports may contain accurate and comprehensive information, they can be difficult for non-experts to understand. This complexity can lead to misinterpretations of financial data and, consequently, inaccurate investment decisions. Furthermore, some economic entities may exploit this complexity to conceal negative information or present a more favorable financial depiction. Transparency in accounting disclosure can play a vital role in the complexity of financial reports by providing comprehensive information. Transparency can enhance the ease of understanding financial reports, helping investors make informed decisions, and vice versa. The efficiency of financial markets depends heavily on the availability of accurate and comprehensive information in a timely manner. Efficient financial markets reflect all available information in stock prices, allowing investors to make decisions based on accurate and up-to-date data. The level of transparency in accounting disclosure, given the complexity of financial reports, can contribute to achieving this efficiency, enabling investors to accurately and quickly assess the financial position of economic entities.

Given the preceding discussion, this research aims to highlight a proposed model for determining the level of transparency in accounting disclosure, given the complexity of financial reports, and its impact on the efficiency of the stock market. This is based on the published annual financial reports of a sample of banks listed on the Iraq Stock Exchange and the annual report of the Iraqi Securities Commission, the regulatory body for the Iraq Stock Exchange, for the period 2016-2023.

2. RESEARCH METHODOLOGY

2.1. Research Problem

The literature review revealed that most studies on transparency in accounting disclosure have focused on advanced financial markets, or have addressed transparency in accounting disclosure and the complexity of financial reports or the efficiency of financial markets separately, without developing an integrated model linking the level of transparency in accounting disclosure and the degree of complexity of financial reports and their combined impact on the efficiency of financial markets, particularly in the Iraqi banking environment. Therefore, the research problem lies in

developing a statistical model to predict the optimal levels of transparency in accounting disclosure and the degree of complexity of financial reports in a way that enhances the efficiency of financial markets. Accordingly, the main research question can be posed as follows:

Can a statistical model be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of financial reporting complexity that achieve the highest levels of efficiency for financial markets of the banks in the research sample?

2.2. Research Objectives

Based on the research problem and its question, the current research seeks to achieve the following main objective:

Proposing a statistical model to predict the optimal levels of transparency in accounting disclosure in the light of the degree of complexity in financial reports in order to achieve the highest level of financial market efficiency through an optimal balance between the level of transparency in accounting disclosure and the degree of financial reporting complexity, rather than relying on transparency in isolation.

2.3. Research Significance

The significance of this research stems from its scientific and practical significance, as follows:

1- **Scientific Significance**: The research's scientific significance lies in proposing a new statistical model that enables the predictive study of the three-way relationship (transparency in accounting disclosure, the complexity of financial reports, and the efficiency of financial markets). This represents a valuable addition to financial and accounting literature and strengthens the role of quantitative models in explanation and prediction.

2- **Practical Significance:** The research's practical significance lies in providing banks and regulatory bodies with a practical tool that can be used to make data-driven decisions. For example, it can help determine the appropriate size and quantity of disclosures to establish the optimal level of transparency, taking into account the complexity of financial reports. This contributes to enhancing market efficiency and protecting investors' interests.

2.4. Research Hypotheses

In light of the nature of the research problem and objectives, the research includes the following main hypothesis:

A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of complexity of financial reports that achieve the highest efficiency in the financial markets of the banks in the research sample.

The following sub-hypotheses stem from the main hypothesis:

a) A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of complexity of financial reports that achieve the highest ISX60 index for the banks in the research sample.

b) A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of complexity of financial reports that achieve the highest trading volume for the banks in the research sample.

c) A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of complexity of financial reports that achieve the highest number of traded shares for the banks in the research sample.
d) A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure under the degree of complexity of financial reports that achieve the highest market capitalization for the banks in the research sample.

2.5. Research Model

Based on the research objectives, problem, and hypotheses, the research model was developed, consisting of three main variables. The model contains an independent variable, which is (transparency in accounting disclosure), and a dependent variable, which is (efficiency of financial markets), represented by four sub-variables, namely (ISX60 index, number of shares traded index, trading volume index, and market capitalization index). On the other hand, the model consists of one mediating variable, which is (degree of financial reporting complexity), due to its mediating role in determining the role of the level of transparency in accounting disclosure in the efficiency of financial markets, as shown in the following figure:

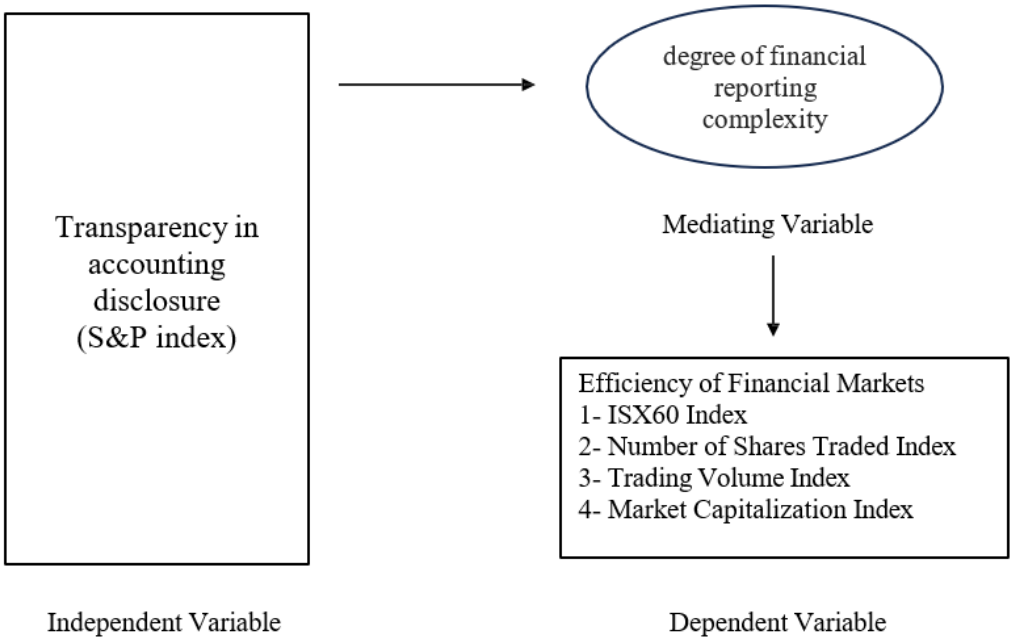

Figure 1. Research Model

Source: Prepared by the researchers

3. LITERATURE REVIEW

3.1. Transparency in Accounting Disclosure

The essence of transparency is based on the free flow of information, enabling stakeholders to directly access the processes, procedures, and information related to their interests. This provides them with sufficient information to understand and monitor these processes. For economic units to be responsive to users' needs, they must be transparent (Finel & Lord, 2000: 61). In general, transparency means having clear documentation about the objectives, operating philosophy, and programs of economic units and making them available to the public. It also means providing the

public with information about the unit's bylaws, organizational structure, personnel system, budget, finances, and relationships, and giving the public the opportunity to review the unit's plans (Coalition for Integrity and Accountability, 2016: 60). Transparency also means presenting information in a way that reduces uncertainty about the source of that information (Al-Adwani, 2009: 256). In this context, transparency is defined, according to the accounting perspective, as the accounting outputs through financial reports being characterized by the highest level of quality of accounting information and the completeness of its qualitative characteristics, and that they do not leave any ambiguity or doubt among their users and enable them to make decisions as if they see what is inside the economic unit (Al Fathallah, 2014: 27). It also means that the responsible party provides information and data related to its activity and places it at the disposal of shareholders, stakeholders and market participants, and gives the opportunity to those who want to view it and not withhold information except that which would harm the interests of the economic unit (Samira and Abbas, 2019: 16). Transparency is the extent to which an economic unit discloses relevant information about its decision-making processes, procedures, and performance. It is a requirement related to providing or requesting information among stakeholders in an information system (Hosseini et al., 2017: 1). It also refers to the clear, complete, and public disclosure of information available to economic units for the purpose of providing it to users and subsequently making decisions (Al-Karawi, 2019: 61). Transparency in accounting disclosure is represented by the clear and complete flow of information from managers to stakeholders in the economic unit (Al-Jajawi and Al-Khafaji, 2018: 6).

3.2. Objectives of Transparency in Accounting Disclosure

Transparency in accounting disclosure aims to:

1. Eliminate misleading information presentation and assist decision-makers in making sound decisions (Al-Ghaban, 2010: 178), and work to eliminate information asymmetry (Al-Desouki, 2013: 6).
2. Provide important information that helps users of financial reports make comparisons between years, and provides information to investors and creditors to allow them to assess risks (Hosseini et al., 2017: 1), predict the future (Al-Hayali, 2008: 122), and make comparisons between years (Ashour, 2008: 26).
3. It contributes to improving the functioning of the market by creating a transparent environment that allows for rational decision-making (Hussein, 2011: 165), maintaining confidence in financial markets, and helping to improve public understanding of the economic unit’s activity and policies (Al-Tamimi and Shaker, 2009: 10), as transparency can help reduce uncertainty in the markets (Hassoun, 2013: 43), and limit the tendency of financial markets to focus on a small number of economic units registered in the market information (Al-Desouki, 2013: 6).

3.3. The Complexity of Financial Reporting

The complexity of financial reports stems from the sheer volume of information they contain, which limits the reader's ability to access crucial details. Furthermore, reports may be written in a style that exceeds the comprehension level of the average reader (linguistic complexity) (Al-

Bahiri, 2022: 368). Guay et al. (2016) also pointed out that the complexity of financial reports generally refers to the complexity of the language used to prepare the financial reports for the economic entity. Hoitash and Hoitash (2018: 259) defined it as "the difficulty faced by users of financial reports due to the abundance of accounting information contained within them, which affects their ability to understand and analyze the results of the economic entity's activities." This definition clearly limits the complexity of reports to their users, excluding those who prepare them. Financial report complexity, as a phenomenon related to the inclusion of a large amount of information in financial reports and the limited ability of users to process this information, is a state of difficulty that users face when reading, understanding, and analyzing the information contained in the financial report (Koholga & Jerry, 2016: 56). Al-Bahiri views it as the inadequacy of financial reports to meet their intended requirements and deliver the information they contain to all stakeholders. This is due to the failure of financial report preparers to write the report appropriately, or due to the reader's limited ability to process the information in the report, or due to factors related to the economic entity, such as the nature of its operations (Al-Bahiri, 2022: 368-369).

3.4. Reasons for the Complexity of Financial Reports

The reasons for the complexity of financial reports can be divided into two types (Abdullah, 2023: 36; ACCA, 2009: 19; SEC, 2008: 20):

1. Unavoidable complexity: This is the complexity inherent in the nature of business activities, transactions, and events themselves. Examples include futures contracts, options, and swaps. This type of complexity may be difficult to avoid because it is linked to the rapidly evolving business environment, which is beyond the control of economic unit management.
2. Avoidable complexity: This stems from the nature of accounting for these transactions according to accounting standards. Several factors contribute to this complexity, such as the length and difficulty in understanding the standards, and the products they generate, such as derivative financial instruments. This complexity can be mitigated by revising accounting standards to make them simpler and clearer, resulting in simpler and more readable financial reports.

3.5. Financial Market Efficiency

Efficient markets are defined as markets in a state of continuous equilibrium, where securities prices are exactly equal to their intrinsic value and move randomly without being controlled (Belkoui, 1981: 127). Financial market efficiency is also defined as a market with a high degree of flexibility, allowing for rapid price responsiveness to changes in the analysis of information and data flowing into the market. This ultimately leads to equilibrium between the market value and the intrinsic value of the security (Azzawi, 2009: 34). Such a market allows investors to achieve normal returns; in other words, all investors can secure average returns in an efficient market. If an investor desires above-average returns, they must be prepared to accept higher returns because stock prices are unpredictable and follow a random pattern (Dash & Dash, 2017: 176). An efficient financial market is one where securities prices act as a mirror reflecting incoming data and information, providing immediate and instantaneous feedback and preventing any market

participant from achieving unintended returns. Ordinary, exceeding others, which leads to the market value of securities reflecting (Al-Jaafari and Al-Batat, 2020: 214).

3.6. Conditions for Achieving the Efficiency of Financial Markets

In general, for financial markets to be efficient, the following conditions must be met (Ben Zayer, 2016: 92-97; Gillett, 1999: 18):

1. Free flow of information: This condition requires the availability of information in the market, its free flow, and its accessibility to all participants without discrimination, so that the price reflects all available information. Therefore, information must reach all economic participants simultaneously; that is, there should be no time gap between the arrival of information to one economic participant and its arrival to another.
2. Free Information: This condition requires that all economic actors have access to information without incurring additional costs. If information is not provided to participants free of charge, they will argue that the cost of the information and its acquisition outweigh the potential loss from not receiving it.
3. Multiple Investors and Availability of Liquidity: There must be a large number of investors in the market, and, conversely, sufficient liquidity to enable them to conduct transactions. A large number of investors without sufficient liquidity negatively impacts the transactions concluded in the market, thus reducing its efficiency.

3.7. The Relationship between Research Variables

The most important characteristics of efficient financial markets are disclosure and transparency. Disclosure involves announcing all information related to economic entities listed on the stock market that could affect the supply and demand for a security. This aims to provide a fair and healthy investment environment for investors, enabling them to make informed investment decisions, including buying and selling, and to determine the appropriate price for a security. Transparency, in its simplest form, means the ability of investors in the stock market to access information and data about bid and ask prices, their volume, and trading volume at all times with complete accuracy, both during and after trading (Saida & Fatima, 2017: 38).

Since transparency means full disclosure, this achieves the highest possible efficiency for the stock market, reduces the tendency of markets to focus on positive or negative rumors, decreases volatility, and achieves relative stability in the stock markets. (Ghanimi, 2011: 18) Transparency improves market efficiency through full disclosure of all information and price disclosure, ensuring equal opportunities in the market and protecting investors by eliminating information asymmetry (GEBI, 2011: 2). Since transparency has no limits, it is required that it be positive and capable of achieving multiple objectives and achieving fairness, meaning not harming the interest of any party for the benefit of another related party (Ghanimi, 2011: 19). Therefore, as a result of the comprehensiveness and breadth of disclosure, it is important to focus on the amount of information that should be disclosed. Economic units often hesitate to increase the level of disclosure and adhere to the minimum, as increasing disclosure may sometimes cause them harm, especially from competitors (Al-Helou, 2010: 26), through the complexity of financial reports,

which can hinder effective communication in financial reports between the economic unit and stakeholders, and it also creates inefficiencies in financial markets (Jad, 2021: 506).

4. THE APPLIED ASPECT OF THE RESEARCH

The developed approach represents a central component of this research, as it proposes a model for determining the level of transparency in accounting disclosure in relation to the degree of financial reporting complexity and its connection with financial market efficiency. Based on observations from actual data, this section provides an important step in translating the theoretical and methodological framework into practical application, enabling the testing of hypotheses and examining relationships among the study variables.

The period **2016–2023** was selected for the **Iraq Stock Exchange (ISX)** due to the significant financial weight of this timeframe and its direct influence on the performance and efficiency of the underlying banking sector listed on the ISX. Several key variables were identified for analysis:

1. The **independent variable**: Transparency in accounting disclosure
2. The **mediating variable**: Degree of financial reporting complexity
3. The **dependent variables** representing financial market efficiency, including the **ISX60 Index**, **Trading Volume Index**, **Number of Shares Index**, and **Market Capitalization Index**

To construct an integrated database that accurately reflects the state of the Iraqi financial market over the study period, the first step involved calculating the annual averages for all sample units. These averages were then aggregated to produce composite measures of the key variables across the study period. Regression analysis was subsequently employed to quantify the explanatory relationships among variables and to assess the impact of transparency levels and financial reporting complexity on various indicators of market efficiency.

4.1. Research Population and Sample

The research population consists of all banks listed on the Iraq Stock Exchange, given that the banking sector is the largest sector locally and has the highest trading value among all sectors. The research sample was selected based on a set of fundamental criteria, including: the regular availability of financial reports for the banks in the sample during the research period (2016-2023), and the exclusion of banks that do not apply accounting standards in the same way. Islamic banks were excluded due to the differences in their standards, activities, and objectives compared to commercial banks. It should be noted that the banks in the research sample have been applying International Financial Reporting Standards (IFRS) since the fiscal year 2016. Banks that were not continuously traded during the research period (2016-2023), or that ceased trading, as well as banks under the supervision of the Central Bank of Iraq, were also excluded.

Based on the above conditions, the research sample consisted of (18) commercial banks (Erbil Bank for Investment and Finance, Ashur International Bank, Iraqi Union Bank, Iraqi Investment Bank, Economy Bank for Investment and Finance, Regional Commercial Bank for Investment and Finance, National Bank of Iraq, Iraqi Credit Bank, Iraqi Commercial Bank, International Development Bank for Investment and Finance, Gulf Commercial Bank, Middle East Iraqi

Investment Bank, United Investment Bank, Mansour Investment Bank, Mosul Bank for Development and Investment, Baghdad Bank, Sumer Commercial Bank, Trans Iraq Bank), and accordingly, the number of observations amounted to (144) observations for the research period, which amounted to (8) years from (2016-2023) for each of the research variables.

4.2. Methodology and Procedures

Each research variable was measured as follows:

1. **Measuring the level of transparency in accounting disclosure**: In order to measure the level of transparency in accounting disclosure for the banks in the study sample, the (S&P) index is used. It is a numerical measure for measuring the transparency of economic units belonging to the (Standard & Poor's) institution. The index consists of (98) items divided into three main axes (ownership structure and shareholders' rights, financial transparency and disclosure of non-financial information, and information about the board of directors). However, since Iraqi laws do not allow the issuance of preferred shares, the items that deal with transparency and disclosure related to the issuance of preferred shares within the first axis are excluded. This makes the evaluation items in this axis (23) items instead of (28) items, and thus the total evaluation items (93) items instead of (98) items as stated in the original model of the (S&P) index. The level of transparency will be measured by giving a score of (1) in the case of disclosure and a score of (0) in the case of non-disclosure of the item as in Appendix No. (1). Then the percentage will be calculated by dividing the disclosed items by the total items according to the following equation:
   Transparency percentage = (Disclosed items / Total items) * 100
2. **Measuring the degree of financial reporting complexity:** To measure the degree of financial reporting complexity, the number of pages of financial reports is used as an indicator (from the disclosure quantity approach), where the more pages there are, the greater the degree of complexity of the financial report. The results of measuring the degree of complexity of financial reports for the banks in the research sample during the period from (2016) to (2023) can be presented as in Appendix No. (1).
3. **Measuring the efficiency of financial markets:** The efficiency of the Iraq Stock Exchange is measured through four indicators, namely (the ISX60 index, the trading volume index, the number of shares traded index, and the market capitalization index) for the period from (2016) to (2023) as in Appendix No. (1).

4.3. Research Variables Data

This section represents the quantitative component of the study, where the mean values of the main variables were calculated. These include the independent variable (**level of transparency in accounting disclosure**), the mediating variable (**Degree of Financial Reporting Complexity**), and the dependent variables related to financial market efficiency (**ISX60 Index**, **Trading Volume Index**, **Number of Shares Index**, and **Market Capitalization Index**). The Research examined (18) banks listed on the Iraq Stock Exchange during the period (2016–2023). The average values of these variables are presented in Table 1:

Table 1: Average Data of Banks during the Period (2016–2023)

Year	Independent Variable (X)	Mediating variable (M)	Dependent Variable 1 (Y1)	Dependent Variable 2 (Y2)	Dependent Variable 3 (Y3)	Dependent Variable 4 (Y4)
2016	36.92	62.22	649.48	312.95	864.66	320.27
2017	42.11	69.06	580.64	305.82	598.57	367.09
2018	43.61	76.50	510.12	127.37	333.58	270.39
2019	48.21	80.39	493.76	58.14	173.22	261.33
2020	50.72	91.61	508.03	193.63	368.46	583.32
2021	52.99	101.83	569.20	666.57	892.81	745.71
2022	53.94	105.67	585.95	348.87	524.25	775.33
2023	53.88	102.39	893.15	512.79	647.84	923.54

Source: Prepared by the researchers based on the published financial reports of the banks included in the research sample.

As shown in Table 1, the study variables exhibited noticeable fluctuations over the study period. The level of transparency in accounting disclosure (X) remained relatively steady with limited variation. The Financial Reporting Complexity (M) increased in 2022 but declined slightly in 2023. The Efficiency Indicators (Y1–Y4) demonstrated more pronounced differences. The ISX60 Index (Y1) recorded a significant improvement in 2023, while the Trading Volume Index (Y2) and the Number of Shares Index (Y3) showed considerable volatility. In contrast, the Market Capitalization Index (Y4) remained relatively stable, reaching its peak at the end of the period. These preliminary findings suggest potential relationships between transparency, reporting complexity, and financial market efficiency—relationships that will be examined in greater depth through advanced statistical tests in the subsequent sections.

4.4. Descriptive Statistics of the Data

Descriptive statistics are among the most fundamental tools for understanding data before conducting advanced statistical tests. They provide a concise overview that helps reveal trends and variability within the analyzed variables. Table 2 summarizes the mean, standard deviation, and frequency distribution. The level of transparency in accounting disclosure shows relatively high stability over time, indicating consistency in accounting disclosure practices. In contrast, the Degree of Financial Reporting Complexity recorded a higher mean along with a large standard deviation, reflecting the increasing complexity of financial reports and the rising demand for more technical and detailed disclosures.

The dependent indicators also displayed distinct patterns. The **ISX60 Index** varied widely between its minimum and maximum values, demonstrating its sensitivity to market movements and changing economic and political conditions. Similarly, both the **Trading Volume Index** and the **Number of Shares Index** showed substantial fluctuations, indicating significant differences in market activity and shifts in investor appetite for buying and holding financial securities. The **Market Capitalization Index**, on the other hand, followed a steady upward trend despite minor

variations, driven by the expansion of the investment base and the increasing capitalization of listed companies.

These findings suggest that the variables under study do not move in a uniform direction; rather, they are influenced by multiple factors. Transparency alone does not appear sufficient to stabilize all market indicators. Instead, financial reporting complexity plays a contrasting role—at times reinforcing and at other times weakening the effect of transparency on market efficiency. Likewise, the extent to which transparency is affected by complexity is not strong enough to ensure stability across all market indicators.

Table 2: Descriptive Statistics of the Data

Variable	Mean	Std. Deviation	Minimum Value	Maximum Value
Transparency in Accounting Disclosure	47.7972	6.30911	36.92	53.94
The Degree of the Financial Reporting Complexity	86.2083	16.52460	62.22	105.67
ISX60 Index	598.7913	129.67993	493.76	893.15
Trading Volume Index	315.7677	199.95217	58.14	666.57
Number of Shares Index	550.4242	253.79358	173.22	892.81
Market Capitalization Index	530.8719	260.36850	261.33	923.54

Source: Prepared by the researchers based on the results of the statistical analysis.

The descriptive statistical results show that accounting disclosure and greater transparency are necessary but not sufficient conditions for improving financial market efficiency. High levels of complexity in financial reports may hinder investors' ability to understand information and make sound decisions, thereby diminishing the effectiveness of transparency. Therefore, achieving a balance between simplicity and comprehensive disclosure represents the most effective accounting strategy for enhancing market efficiency and promoting stable investment. This balance contributes to an optimal accounting model that supports market efficiency and sustained investment returns.

4.5. Normality Test for Dependent Variables

The normality of the data distribution must be tested before performing inferential statistical analysis, as most statistical tests assume that the data are normally distributed. **EasyFit 5.5** software was used to conduct two primary normality tests on both the dependent and moderating variables, as shown in Table 3.

Table 3: Normality Tests

Variable	Kolmogorov–Smirnov Test	Anderson–Darling Test

	Statistic	p-value	Critical Value	Statistic	Critical Value
ISX60 Index	0.2894	0.434	0.4543	0.8040	2.5018
Trading Volume Index	0.1840	0.906	0.4543	0.2224	2.5018
Number of Shares Index	0.1422	0.989	0.4543	0.1958	2.5018
Market Capitalization Index	0.2353	0.685	0.4543	0.4352	2.5018
Degree of Financial Reporting Complexity	0.2028	0.837	0.4543	0.3085	2.5018

Source: Prepared by the researchers based on the results of the statistical analysis.

The Kolmogorov–Smirnov (K–S) test results indicate that all dependent variables (ISX60 Index, Trading Volume, Number of Shares, Market Capitalization) and the moderating variable (Degree of Financial Reporting Complexity) exceeded the significance level of 0.05, with values of 0.434, 0.906, 0.989, 0.685, and 0.837, respectively. This indicates that the data are normally distributed. Similarly, the Anderson–Darling (A–D) test results show that all estimated statistics were below the critical value of 2.5018, ranging from 0.1958 to 0.8040, further confirming that the variables do not substantially deviate from a normal distribution.

Overall, the findings in Table 3 suggest that the distribution of all dependent and moderating variables is normal according to both the K–S and A–D tests. This result validates the use of parametric statistical methods for subsequent analyses and hypothesis testing with greater confidence. From an accounting perspective, it also strengthens the reliability of the results, indicating that fluctuations in Iraqi financial market indicators can be statistically explained rather than arising from uncontrolled random variations.

4.6. Hypothesis Testing of the Research

Testing the hypotheses of the study is a crucial analytical step for evaluating the proposed conceptual model, which assumes a relationship between transparency in accounting disclosure and financial market efficiency. The degree of financial reporting complexity serves as a moderating variable, as it can either strengthen or weaken the effect of transparency on market performance indicators. This stage of the analysis moves beyond descriptive and correlational assessments, incorporating a more rigorous examination of the interactions and integrative relationships between variables. By including complexity as a moderating factor, the analysis acknowledges the multifaceted nature of financial reporting contexts. Transparency alone may not directly produce a positive impact on market efficiency unless the information is sufficiently clear and interpretable.

To investigate these relationships, multiple regression models were developed for each dependent variable: **ISX60 Index, Trading Volume, Number of Shares, and Market Capitalization**. In each model, transparency is the independent variable, complexity is the moderating variable, and

the interaction term captures their joint influence on the market efficiency indicator. This methodological approach enables a deeper understanding of the effects of transparency and complexity on financial market outcomes.

This approach provides a comprehensive examination of the theoretical relationships proposed, allowing validation of both the direct effects of transparency and complexity and their interaction effects. These tests are expected to clarify the role of accounting disclosure practices, as measured by reporting complexity, in information acquisition and market stability within the context of Iraq. Accordingly, the study tests the following four hypotheses:

H1: A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure, considering the degree of complexity of financial reports, to achieve the highest ISX60 Index for the banks in the research sample.

The **ISX60 Index** is a key indicator of market efficiency. Examining how this index is influenced by accounting transparency and the degree of financial reporting complexity provides a deeper understanding of market behavior. Multiple regression analysis was used to assess the combined effects of the independent variables on variations in the index.

Table 4: Multiple Regression Model for the First Dependent Variable

Regression Coefficients		t-value	p-value	F-value	p-value	R	R2
Constant	6158.23	10.229	< 0.001	40.591	< 0.001	0.682	0.454
X (Transparency)	-93.900	-9.941	< 0.001				
M (Complexity)	-94.510	-7.831	< 0.001				
XM (Interaction)	1.681	8.976	< 0.001				

Source: Prepared by the researchers based on the results of the statistical analysis.

The results indicate that the model is robust, with significance at **Sig = 0.001** for all regression coefficients, as shown in Table 4. The intercept term was **6158.23** with **t = 10.229**, providing an equilibrium value for the ISX60 Index, assuming other variables are zero. The coefficient of transparency (X) was negative at **–93.900**, with a t-value of –9.941, indicating that increases in transparency beyond certain thresholds lead to a decrease in the index value. Similarly, the coefficient of complexity (M) was negative at **–94.510**, with a t-value of –7.831, suggesting that increases in complexity initially tend to have a negative impact on the index.

However, when the interaction term (XM) was included, its coefficient became positive at **1.681**, with a statistically significant t-value. This indicates a corrective or moderating effect, where the combined influence of transparency and complexity mitigates the negative effects of each variable individually, resulting in a more balanced response of the index. The model's **F-value** is significant at **Sig = 0.001**, indicating the overall validity of the regression model. The coefficient of correlation, **R = 0.682**, and **R^2 = 0.454**, suggest that 45.4% of the variance in the ISX60 Index is explained by the independent variables and their interactions.

These findings imply that transparency, complexity, and market efficiency are not only inversely related but also interdependent. Neither transparency nor complexity alone guarantees a positive impact; maintaining a balance between these factors is crucial for achieving an appropriate market response. The predicted model for the ISX60 Index, based on transparency and the degree of financial reporting complexity, can be expressed as follows:

$$\hat{Y}_{1i} = 6158.23 - 93.900 \times X - 94.510 \times M + 1.681 \times XM$$

Statistical evidence indicates that the variables X, M, and XM significantly enhance the explanatory power of the model. The predicted values closely matched the actual figures, demonstrating the reliability of the model for forecasting purposes.

From an accounting perspective, these results do not imply a direct causal relationship between transparency and complexity. Rather, their interaction is critical for market efficiency. Transparency alone does not necessarily improve the ISX60 Index if it results in excessive complexity, which can confuse investors. However, when considered in interaction, a balance between clear and technical disclosure can have a stronger positive impact on investor confidence and overall market performance. This reinforces the principle that effective accounting disclosure is not merely about providing more information but about achieving an optimal balance between transparency and clarity to enhance market efficiency and responsiveness.

H2: A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure, considering the degree of complexity of financial reports, to achieve the highest Trading Volume for the banks in the research sample.

The **Trading Volume Index** is a key indicator of market liquidity and responsiveness to disclosed financial data. Studying its relationship with transparency, complexity, and their interaction is essential for understanding how these factors influence market activity. These relationships were observed to be consistent and were further validated through multiple regression models.

Table 5: Multiple Regression Model for the Second Dependent Variable

Regression Coefficients		t-value	p-value	F-value	p-value	R	R2
Constant	5382.31	6.635	< 0.001	67.594	< 0.001	0.769	0.592
X (Transparency)	-124.43	-9.777	< 0.001				
M (Complexity)	-60.192	-3.701	< 0.001				
XM (Interaction)	1.442	5.714	< 0.001				

Source: Prepared by the researchers based on the results of the statistical analysis.

The results presented in Table 5 indicate that all regression coefficients are highly significant at the 0.001 level, confirming the strength and validity of the model. The constant term (**5382.31**) with a t-value of 6.35 indicates that the Trading Volume Index has a baseline value independent of the other variables. The coefficient of transparency (X) is negative (**–124.43**) with a t-value of – 9.777, suggesting that increases in transparency beyond certain levels may lead to a reduction in

trading volume. Similarly, the coefficient of complexity (M) is negative (**–60.192**) with **t = –3.701**, indicating that higher financial reporting complexity initially tends to suppress trading activity. However, the interaction term (XM) has a positive coefficient (**1.442**) with **t = 5.714**, suggesting that the combined effect of transparency and complexity mitigates the individual negative effects and enhances market stability at higher levels. The model's F-statistic is significant at **p = 0.001**, while the correlation coefficient **R = 0.769** and coefficient of determination **R² = 0.592** indicate that the independent and interaction variables explain approximately 59.2% of the variation in trading volume. Accordingly, the predicted model for the Trading Volume Index, based on transparency and the degree of financial reporting complexity, can be expressed as follows:

$$\hat{Y}2i = 5382.31 - 124.43 \times X - 60.192 \times M + 1.442 \times XM$$

Overall, the model's predictions show a strong correspondence between actual and estimated values, providing a robust framework and a useful tool for forecasting future trading volumes. From a theoretical and accounting perspective, the results indicate that the interactive model (**X, M, XM**) is more realistic than a model considering only disclosure effects. Market benefits are not solely derived from greater transparency or reduced complexity but from a balance between the two. The combination of transparent communication and technical detail allows investors to understand information more effectively, enhancing confidence and maintaining market liquidity.

H3: A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure, considering the degree of complexity of financial reports, to achieve the highest Number of Shares Traded for the banks in the research sample.

The Number of Shares Traded is a major indicator of market activity and investors' willingness to trade. To investigate its relationship with transparency, complexity, and their interaction effect, a multiple regression model was employed. This approach provides a clear assessment of the individual and joint effects of the independent variables on the dependent variable.

Table 6: Multiple Regression Model for the Third Dependent Variable

Regression Coefficients		t-value	p-value	F-value	p-value	R	R2
Constant	10092.47	10.948	< 0.001				
X (Transparency)	-225.114	-15.564	< 0.001	95.874	< 0.001	0.820	0.673
M (Complexity)	-102.51	-5.547	< 0.001				
XM (Interaction)	2.389	8.330	< 0.001				

Source: Prepared by the researchers based on the results of the statistical analysis.

The results in Table 6 show that all regression coefficients are highly significant (**Sig < 0.001**), confirming the robustness and validity of the model. The constant term (**10092.47**) with a t-value of **10.948** indicates that the index has a baseline value independent of the explanatory variables.

The coefficient of transparency (X) is negative and significant (**–225.114**, t = –15.564), suggesting that increases in transparency within the medium to low range may lead to a decrease in the number of traded shares. This may reflect a cautious adjustment in investor behavior following increased disclosure. The coefficient of complexity (M) is also negative (**–102.51**, t = – 5.547), indicating that more complex financial reports can reduce trading activity by limiting investors' ability to interpret information efficiently.

However, the interaction term (XM) is positive and significant (**2.389**, t = 8.330), indicating that the combined effect of transparency and complexity mitigates the negative impacts of each variable individually. This finding highlights the importance of balancing transparency and technical complexity to enhance market responsiveness.

The model's F-statistic (**95.874**) is significant at **p < 0.001**, supporting the overall explanatory power of the regression. The correlation coefficient (**R = 0.820**) indicates a strong association, while the coefficient of determination (**R^2 = 0.673**) suggests that approximately 67.3% of the variation in the Stock Volume Index can be explained by the independent variables and their interaction. Accordingly, the predicted model for the Stock Volume Index, based on transparency and the degree of financial reporting complexity, can be expressed as follows:

$$Y_{3i} = 10092.47 - 225.114 \times X - 102.51 \times M + 2.389 \times XM$$

Overall, the results highlight the interplay between accounting transparency and report complexity, which provides a more realistic understanding of how these factors influence market activity. The findings suggest that neither excessive transparency nor high complexity alone improves trading efficiency; instead, a balanced interaction between the two ensures stable trading volume and increased investor confidence. The interaction term acts as a moderating factor, showing that controlled complexity combined with transparency enhances market responsiveness and overall efficiency.

H4: A statistical model can be proposed to predict the optimal levels of transparency in accounting disclosure, considering the degree of complexity of financial reports, to achieve the highest Market Value for the banks in the research sample.

Market value is a key indicator of the capital strength of listed companies and the overall attractiveness of the financial market to investors. Studying its relationship with transparency, complexity, and their interaction is essential for understanding market efficiency. This relationship was analyzed using a multiple regression model.

Table 7: Multiple Regression Model for the Fourth Dependent Variable

Regression Coefficients		t-value	p-value	F-value	p-value	R	R2
Constant	5174.11	10.469	< 0.001				
X (Transparency)	-107.96	-13.923	< 0.001	475.29	< 0.001	0.954	0.911
M (Complexity)	-73.808	-7.450	< 0.001				

XM (Interaction)	1.634	10.631	< 0.001				

Source: Prepared by the researchers based on the results of the statistical analysis.

The results presented in Table 7 indicate that all regression coefficients are statistically significant at the 0.001 level, confirming the robustness of the model. The constant term (**5174.11**) with a t-value of 10.469 suggests that market value has an inherent baseline, independent of the explanatory variables. The coefficient of transparency (X) is negative (**–107.96**, t = –13.923), indicating that at lower levels, increases in transparency may temporarily reduce market value, as the market requires time to process new information. Similarly, the coefficient of complexity (M) is negative (**–73.808**, t = –7.450), suggesting that higher levels of financial reporting complexity may initially restrict market capitalization.

However, when the interaction term (XM) is introduced, its coefficient becomes positive (**1.634**, t = 10.631), indicating that the combined effect of transparency and complexity mitigates the negative effects of each variable individually and enhances market value. The overall model fit is strong, with **F = 475.29**, **Sig. = 0.001**, a very high correlation coefficient (**R = 0.954**), and **R^2 = 0.911**, indicating that approximately 91.1% of the variation in market value is explained by transparency, complexity, and their interaction. Accordingly, the predicted model for market value, based on transparency and reporting complexity, can be expressed as:

$$Y_{4i} = 5174.11 - 107.96 \times X - 73.808 \times M + 1.634 \times XM$$

Overall, the model is highly predictive, with estimated values closely matching observed data even at extreme points, confirming its ability to explain changes in market value. The results align with accounting evidence indicating that market value is influenced not by transparency or complexity in isolation, but by their interaction. Gaps in disclosure quality during years such as 2017 and 2019, whether due to overly detailed or incomplete reporting, limited investors' ability to interpret information accurately. In contrast, the convergence between actual and predicted values in 2021–2022 demonstrates that a balanced mix of transparency and complexity can enhance investor confidence and market capitalization.

These findings suggest that the most effective accounting disclosure balances clarity with informational depth. Excessive transparency without structure may confuse investors, while excessive complexity can obscure meaning. The integrated interaction model (X, M, XM) shows that transparency and complexity together enhance market value and serve as an important reflection of market efficiency and stability.

In the statistical analysis, transparency and reporting complexity exhibit interactive and nonlinear effects on the ISX60 Index, trading volume, number of shares, and market value. Individually, the effects of transparency and complexity were initially negative, indicating that excessive focus on one aspect could weaken market performance. When the interaction term (XM) is included, the relationship becomes positive, showing that balanced, integrative disclosure improves market responsiveness and strengthens the reliability of market indicators.

The model's explanatory power is considerable, with R^2 values ranging from 0.454 for the ISX60 Index to 0.911 for the market value index, highlighting significant interpretive strength, particularly for market value. The close correspondence between actual and predicted values

across years further reinforces the model's potential for future predictive applications in financial market analysis.

5. CONCLUSION

1. Financial market efficiency is achieved through a balance between transparency in accounting disclosure and the complexity of financial reports because the most effective accounting transparency is achieved by combining clarity and depth of information, not by relying on either one alone.
2. The results of the multiple regression model indicate that the transparency coefficient in accounting disclosure (X = -93.900) and the complexity coefficient in financial reports (M= -94.510) are both negative. This reflects the fact that any single increase in either transparency or complexity at the initial levels may lead to a decrease in the ISX60 index. However, the interaction coefficient between the two variables (XM = 1.681) showed a statistically significant positive value, indicating that combining transparency and complexity mitigates the negative impact of each and strengthens the index at higher levels. The explanatory power of the model is (R^2 = 0.454), meaning that approximately 45.4% of the variation in the ISX60 can be explained by the level of transparency, complexity, and their interaction. The proposed interactive models for the relationship between transparency (X), complexity (M), and their interaction (XM) with the ISX60 index are represented in the following formulas:
   $\hat{Y}_1 = 6158.23 - 93.900\ X - 94.510\ M + 1.681\ XM$
3. The regression analysis results showed that the transparency coefficient (X = -124.43) and the complexity score (M = -60.192) were negative, indicating that each individually could weaken trading volume at low or medium levels. In contrast, the interaction coefficient between transparency and complexity (XM = 1.442) was positive and statistically significant, suggesting that combining the two variables reduces the negative impact of each and enhances the stability of trading volume at higher levels. The explanatory power of the model was (R^2 = 0.592), meaning that approximately 59.2% of the change in trading volume can be explained by the three variables. The proposed interaction models for the relationship between transparency (X), complexity (M), and their interaction (XM) with the trading volume index are represented in the following formulas:
   $\hat{Y}_2 = 5382.31 - 124.43\ X - 60.192\ M + 1.442\ XM$
4. The regression results showed that the transparency (X = -225.114) and complexity (M =-102.51) coefficients were negative, reflecting that any single increase in either variable may lead to a decrease in the number of shares traded. The interaction coefficient (XM = 2.389) was positive and statistically significant, indicating that combining transparency and complexity mitigates the negative impact of each and enhances the number of shares traded at higher levels. The explanatory power of the model was (R^2 = 0.673), meaning that approximately 67.3% of the change in the number of shares traded is explained by the three variables. The proposed interaction models for the relationship between transparency (X), complexity (M), and their interaction (XM) with the (number of shares traded) index are represented in the following formulas:

$\hat{Y}_3 = 10092.47 - 225.114\ X - 102.51\ M + 2.389\ XM$

5. The results of the regression model indicate that the transparency coefficients (X = -107.96) and the complexity score (M = -73.808) were negative, reflecting that any single increase in transparency or complexity at average levels may negatively affect market capitalization due to the market's need to absorb disclosures. In contrast, the interaction coefficient (XM= 1.634) showed a positive and statistically significant value, indicating that a balance between transparency and complexity enhances market capitalization and increases the market's attractiveness to investors. The model's explanatory power was very high (R^2 = 0.911), meaning that approximately 91.1% of the change in market capitalization can be explained by the level of transparency, complexity, and their interaction. The proposed interaction models for the relationship between transparency (X), complexity (M), and their interaction (XM) with the market capitalization index are represented in the following formulas:

$\hat{Y}_4 = 5174.11 - 107.96\ X - 73.808\ M + 1.634\ XM$

6. RECOMMENDATIONS

1. Adjust the level of transparency in accounting disclosure to reduce excessive complexity in financial reports: Banks should prepare financial reports in a way that balances information richness and clarity, ensuring that explanatory notes and detailed tables are organized in a simplified and easy-to-read manner.
2. Adopt the proposed models for determining optimal levels of transparency and complexity in financial reporting by Iraqi banks to achieve the highest level of financial market efficiency, because these models, which combine transparency and complexity (XMR), can be used as a diagnostic and predictive tool to assess the efficiency of the financial market and can be used to estimate the impact of any change in transparency or complexity before its actual implementation.
3. Banks and regulatory authorities are encouraged to utilize interactive digital reporting tools (such as dashboards and XBRL-based reports) to manage the interaction between transparency and financial reporting complexity, rather than merely increasing the volume of disclosed information. Thus, ensuring that accounting information is understandable and usable by all investor categories without affecting the complexity of financial reports.
4. Inviting future researchers to test the model in other local and regional markets and sectors, enabling researchers and practitioners to develop comparative indicators over time or between economic units in different sectors to verify the possibility of generalizing its results or modifying them to suit the specificities of each financial market.

7. LIMITATIONS

One of the main limitations of this research concerns the measurement of the complexity of financial reports. The use of commonly applied complexity indices was constrained by the nature of the banks' financial reports, which were predominantly available in image-based file formats. This limitation prevented the effective use of specialized software typically employed to calculate such indices. Accordingly, the researchers were unable to directly apply index-based measures of complexity of financial reports. As an alternative, and consistent with the disclosure quantity

approach, the research relied on the number of pages in the financial reports of the research sample as a proxy for measuring the complexity of financial reports. This measure allows for consistency and comparability across banks, and this should be taken into account when interpreting the results.

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APPENDIX (1): MEASURING RESEARCH VARIABLES

Bank_ID	**Year**	**Independent Variable**	**Mediating Variable**	**Dependent Variable (Efficiency_Index)**			
		Transparency_ Index	Complexity_ Index	ISX 60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Erbil Investment and Finance Bank	2016	24.7311828	33	649.48	312.9461	864.66	320.266
Ashur International Bank	2016	51.61290323	85	649.48	312.9461	864.66	320.266

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX 60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Iraqi Union Bank	2016	33.33333333	60	649.48	312.9461	864.66	320.266
Iraqi Investment Bank	2016	47.31182796	69	649.48	312.9461	864.66	320.266
Economy Bank for Investment and Finance	2016	32.25806452	79	649.48	312.9461	864.66	320.266
Regional Trade Bank for Investment and Finance	2016	30.10752688	54	649.48	312.9461	864.66	320.266
National Bank of Iraq	2016	23.65591398	62	649.48	312.9461	864.66	320.266
Iraqi Credit Bank	2016	30.10752688	49	649.48	312.9461	864.66	320.266
Commercial Bank of Iraq	2016	38.70967742	58	649.48	312.9461	864.66	320.266
International Development Bank for Investment and Finance	2016	40.86021505	105	649.48	312.9461	864.66	320.266
Gulf Commercial Bank	2016	41.93548387	70	649.48	312.9461	864.66	320.266
Middle East Iraqi	2016	7.52688172	1	649.48	312.9461	864.6647	320.266

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX 60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Investment Bank							
United Investment Bank	2016	36.55913978	62	649.48	312.9461	864.66	320.266
United Investment Bank	2016	48.38709677	48	649.48	312.9461	864.66	320.266
Mosul Bank for Development and Investment	2016	37.6344086	73	649.48	312.9461	864.66	320.266
Bank of Baghdad	2016	46.23655914	84	649.48	312.9461	864.66	320.266
Sumer Commercial Bank	2016	39.78494624	42	649.48	312.9461	864.66	320.266
Trans Iraq Bank	2016	53.76344086	86	649.48	312.9461	864.66	320.266
Erbil Investment and Finance Bank	2017	33.33333333	31	580.64	305.8215	598.5656	367.0916
Ashur International Bank	2017	51.61290323	101	580.64	305.8215	598.5656	367.0916
Iraqi Union Bank	2017	34.40860215	50	580.64	305.8215	598.5656	367.0916

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Iraqi Investment Bank	2017	48.38709677	68	580.64	305.8215	598.5656	367.0916
Economy Bank for Investment and Finance	2017	41.93548387	92	580.64	305.8215	598.5656	367.0916
Regional Trade Bank for Investment and Finance	2017	30.10752688	51	580.64	305.8215	598.5656	367.0916
National Bank of Iraq	2017	39.78494624	85	580.64	305.8215	598.5656	367.0916
Iraqi Credit Bank	2017	31.182795 7	46	580.64	305.8215	598.5656	367.0916
Commercial Bank of Iraq	2017	38.70967742	59	580.64	305.8215	598.5656	367.0916
International Development Bank for Investment and Finance	2017	43.01075269	84	580.64	305.8215	598.5656	367.0916
Gulf Commercial Bank	2017	39.78494624	68	580.64	305.8215	598.5656	367.0916
Middle East Iraqi Investment Bank	2017	32.25806452	100	580.64	305.8215	598.5656	367.0916

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX 60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
United Investment Bank	2017	36.55913978	73	580.64	305.8215	598.5656	367.0916
United Investment Bank	2017	54.83870968	56	580.64	305.8215	598.5656	367.0916
Mosul Bank for Development and Investment	2017	44.08602151	58	580.64	305.8215	598.5656	367.0916
Bank of Baghdad	2017	48.38709677	96	580.64	305.8215	598.5656	367.0916
Sumer Commercial Bank	2017	45.16129032	44	580.64	305.8215	598.5656	367.0916
Trans Iraq Bank	2017	64.51612903	81	580.64	305.8215	598.5656	367.0916
Erbil Investment and Finance Bank	2018	34.40860215	30	510.12	127.3728	333.5798	270.385
Ashur International Bank	2018	51.61290323	96	510.12	127.3728	333.5798	270.385
Iraqi Union Bank	2018	35.48387097	47	510.12	127.3728	333.5798	270.385
Iraqi Investment Bank	2018	48.38709677	64	510.12	127.3728	333.5798	270.385

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Economy Bank for Investment and Finance	2018	52.68817204	133	510.12	127.3728	333.5798	270.385
Regional Trade Bank for Investment and Finance	2018	31.1827957	56	510.12	127.3728	333.5798	270.385
National Bank of Iraq	2018	45.16129032	64	510.12	127.3728	333.5798	270.385
Iraqi Credit Bank	2018	40.86021505	66	510.12	127.3728	333.5798	270.385
Commercial Bank of Iraq	2018	38.70967742	66	510.12	127.3728	333.5798	270.385
International Development Bank for Investment and Finance	2018	48.38709677	96	510.12	127.3728	333.5798	270.385
Gulf Commercial Bank	2018	41.93548387	81	510.12	127.3728	333.5798	270.385
Middle East Iraqi Investment Bank	2018	37.6344086	108	510.12	127.3728	333.5798	270.385
United Investment Bank	2018	36.55913978	81	510.12	127.3728	333.5798	270.385

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
United Investment Bank	2018	54.83870968	58	510.12	127.3728	333.5798	270.385
Mosul Bank for Development and Investment	2018	41.93548387	59	510.12	127.3728	333.5798	270.385
Bank of Baghdad	2018	59.13978495	131	510.12	127.3728	333.5798	270.385
Sumer Commercial Bank	2018	21.50537634	59	510.12	127.3728	333.5798	270.385
Trans Iraq Bank	2018	64.51612903	82	510.12	127.3728	333.5798	270.385
Erbil Investment and Finance Bank	2019	34.40860215	32	493.76	58.1422	173.2244	261.33
Ashur International Bank	2019	52.68817204	97	493.76	58.1422	173.2244	261.33
Iraqi Union Bank	2019	34.40860215	45	493.76	58.1422	173.2244	261.33
Iraqi Investment Bank	2019	48.38709677	70	493.76	58.1422	173.2244	261.33
Economy Bank for Investment and Finance	2019	53.76344086	107	493.76	58.1422	173.2244	261.33

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Regional Trade Bank for Investment and Finance	2019	32.25806452	61	493.76	58.1422	173.2244	261.33
National Bank of Iraq	2019	45.16129032	89	493.76	58.1422	173.2244	261.33
Iraqi Credit Bank	2019	40.86021505	71	493.76	58.1422	173.2244	261.33
Commercial Bank of Iraq	2019	54.83870968	84	493.76	58.1422	173.2244	261.33
International Development Bank for Investment and Finance	2019	52.68817204	84	493.76	58.1422	173.2244	261.33
Gulf Commercial Bank	2019	51.61290323	126	493.76	58.1422	173.2244	261.33
Middle East Iraqi Investment Bank	2019	38.70967742	117	493.76	58.1422	173.2244	261.33
United Investment Bank	2019	36.55913978	72	493.76	58.1422	173.2244	261.33
United Investment Bank	2019	60.21505376	59	493.76	58.1422	173.2244	261.33
Mosul Bank for	2019	44.08602151	49	493.76	58.1422	173.2244	261.33

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Development and Investment							
Bank of Baghdad	2019	65.59139785	147	493.76	58.1422	173.2244	261.33
Sumer Commercial Bank	2019	56.98924731	60	493.76	58.1422	173.2244	261.33
Trans Iraq Bank	2019	64.51612903	77	493.76	58.1422	173.2244	261.33
Erbil Investment and Finance Bank	2020	48.38709677	52	508.03	193.6272	368.4603	583.3181
Ashur International Bank	2020	52.68817204	125	508.03	193.6272	368.4603	583.3181
Iraqi Union Bank	2020	34.40860215	58	508.03	193.6272	368.4603	583.3181
Iraqi Investment Bank	2020	49.46236559	76	508.03	193.6272	368.4603	583.3181
Economy Bank for Investment and Finance	2020	53.76344086	107	508.03	193.6272	368.4603	583.3181
Regional Trade Bank for Investment and Finance	2020	43.01075269	73	508.03	193.6272	368.4603	583.3181

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
National Bank of Iraq	2020	47.31182796	127	508.03	193.6272	368.4603	583.3181
Iraqi Credit Bank	2020	41.93548387	72	508.03	193.6272	368.4603	583.3181
Commercial Bank of Iraq	2020	54.83870968	77	508.03	193.6272	368.4603	583.3181
International Development Bank for Investment and Finance	2020	51.61290323	70	508.03	193.6272	368.4603	583.3181
Gulf Commercial Bank	2020	53.76344086	105	508.03	193.6272	368.4603	583.3181
Middle East Iraqi Investment Bank	2020	44.08602151	145	508.03	193.6272	368.4603	583.3181
United Investment Bank	2020	46.23655914	79	508.03	193.6272	368.4603	583.3181
United Investment Bank	2020	60.21505376	69	508.03	193.6272	368.4603	583.3181
Mosul Bank for Development and Investment	2020	44.08602151	58	508.03	193.6272	368.4603	583.3181
Bank of Baghdad	2020	65.59139785	160	508.03	193.6272	368.4603	583.3181

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Sumer Commercial Bank	2020	56.98924731	113	508.03	193.6272	368.4603	583.3181
Trans Iraq Bank	2020	64.51612903	83	508.03	193.6272	368.4603	583.3181
Erbil Investment and Finance Bank	2021	46.23655914	60	569.2	666.5738	892.8113	745.7069
Ashur International Bank	2021	56.98924731	151	569.2	666.5738	892.8113	745.7069
Iraqi Union Bank	2021	45.16129032	78	569.2	666.5738	892.8113	745.7069
Iraqi Investment Bank	2021	56.98924731	89	569.2	666.5738	892.8113	745.7069
Economy Bank for Investment and Finance	2021	53.76344086	99	569.2	666.5738	892.8113	745.7069
Regional Trade Bank for Investment and Finance	2021	45.16129032	83	569.2	666.5738	892.8113	745.7069
National Bank of Iraq	2021	49.46236559	116	569.2	666.5738	892.8113	745.7069
Iraqi Credit Bank	2021	45.16129032	69	569.2	666.5738	892.8113	745.7069

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Commercial Bank of Iraq	2021	54.83870968	90	569.2	666.5738	892.8113	745.7069
International Development Bank for Investment and Finance	2021	51.61290323	70	569.2	666.5738	892.8113	745.7069
Gulf Commercial Bank	2021	53.76344086	126	569.2	666.5738	892.8113	745.7069
Middle East Iraqi Investment Bank	2021	56.98924731	153	569.2	666.5738	892.8113	745.7069
United Investment Bank	2021	46.23655914	79	569.2	666.5738	892.8113	745.7069
United Investment Bank	2021	63.44086022	121	569.2	666.5738	892.8113	745.7069
Mosul Bank for Development and Investment	2021	37.6344086	53	569.2	666.5738	892.8113	745.7069
Bank of Baghdad	2021	65.59139785	193	569.2	666.5738	892.8113	745.7069
Sumer Commercial Bank	2021	60.21505376	109	569.2	666.5738	892.8113	745.7069

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Trans Iraq Bank	2021	64.51612903	94	569.2	666.5738	892.8113	745.7069
Erbil Investment and Finance Bank	2022	49.46236559	64	585.95	348.871	524.249	775.3346
Ashur International Bank	2022	59.13978495	139	585.95	348.871	524.249	775.3346
Iraqi Union Bank	2022	45.16129032	78	585.95	348.871	524.249	775.3346
Iraqi Investment Bank	2022	55.91397849	95	585.95	348.871	524.249	775.3346
Economy Bank for Investment and Finance	2022	53.76344086	131	585.95	348.871	524.249	775.3346
Regional Trade Bank for Investment and Finance	2022	45.16129032	88	585.95	348.871	524.249	775.3346
National Bank of Iraq	2022	55.91397849	176	585.95	348.871	524.249	775.3346
Iraqi Credit Bank	2022	51.61290323	101	585.95	348.871	524.249	775.3346
Commercial Bank of Iraq	2022	54.83870968	91	585.95	348.871	524.249	775.3346
International Development	2022	51.61290323	76	585.95	348.871	524.249	775.3346

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Bank for Investment and Finance							
Gulf Commercial Bank	2022	51.61290323	93	585.95	348.871	524.249	775.3346
Middle East Iraqi Investment Bank	2022	56.98924731	156	585.95	348.871	524.249	775.3346
United Investment Bank	2022	48.38709677	78	585.95	348.871	524.249	775.3346
United Investment Bank	2022	63.44086022	107	585.95	348.871	524.249	775.3346
Mosul Bank for Development and Investment	2022	44.08602151	79	585.95	348.871	524.249	775.3346
Bank of Baghdad	2022	58.06451613	141	585.95	348.871	524.249	775.3346
Sumer Commercial Bank	2022	61.29032258	113	585.95	348.871	524.249	775.3346
Trans Iraq Bank	2022	64.51612903	96	585.95	348.871	524.249	775.3346
Erbil Investment	2023	38.70967742	52	893.15	512.787	647.843	923.5429

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
and Finance Bank							
Ashur International Bank	2023	59.13978495	140	893.15	512.787	647.843	923.5429
Iraqi Union Bank	2023	45.16129032	77	893.15	512.787	647.843	923.5429
Iraqi Investment Bank	2023	56.98924731	106	893.15	512.787	647.843	923.5429
Economy Bank for Investment and Finance	2023	53.76344086	137	893.15	512.787	647.843	923.5429
Regional Trade Bank for Investment and Finance	2023	45.16129032	77	893.15	512.787	647.843	923.5429
National Bank of Iraq	2023	55.91397849	188	893.15	512.787	647.843	923.5429
Iraqi Credit Bank	2023	52.68817204	101	893.15	512.787	647.843	923.5429
Commercial Bank of Iraq	2023	54.83870968	91	893.15	512.787	647.843	923.5429
International Development Bank for Investment	2023	51.61290323	79	893.15	512.787	647.843	923.5429
and Finance							

Bank_ID	Year	Independent Variable	Mediating Variable	Dependent Variable (Efficiency_Index)			
		Transparency_ Index	Complexity_ Index	ISX60_ Index	Trading Volume_Index (Billion IQD)	No. of Shares_Index (Billion shares)	Market Value_Index (Billion IQD)
Gulf Commercial Bank	2023	53.76344086	96	893.15	512.787	647.843	923.5429
Middle East Iraqi Investment Bank	2023	56.98924731	123	893.15	512.787	647.843	923.5429
United Investment Bank	2023	47.31182796	74	893.15	512.787	647.843	923.5429
United Investment Bank	2023	63.44086022	107	893.15	512.787	647.843	923.5429
Mosul Bank for Development and Investment	2023	39.78494624	83	893.15	512.787	647.843	923.5429
Bank of Baghdad	2023	68.8172043	155	893.15	512.787	647.843	923.5429
Sumer Commercial Bank	2023	61.29032258	69	893.15	512.787	647.843	923.5429
Trans Iraq Bank	2023	64.51612903	88	893.15	512.787	647.843	923.5429