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BIG DATA ANALYSIS USING ARTIFICIAL INTELLIGENCE AND ITS ROLE IN ENHANCING FINANCIAL TRANSPARENCY

Dr. Hayder Jameel Ahmed
Polytechnic College- Karbala, AL-Furat Al-Awsat
Technical University, Karbala- Iraq,
Correspondence: Haider86@atu.edu.iq

Abstract
This study will examine the role of artificial intelligence in handling big data and its impact on enhancing corporate financial transparency. The study focuses on a sample of Iraqi banks listed on the Iraqi Stock Exchange during the period from 2014 to 2024. Two models were developed based on previous literature. The first model includes three main groups of indicators to measure the independent variable: managerial capabilities, technical capabilities, and tangible and intangible asset management. These groups comprise a total of ten sub-indicators. To assess the dependent variable—financial transparency—five main indicators were developed: governance, disclosure, investor confidence, timing of financial reports, and financial analysis. SPSS v27 was used to test the hypotheses. Our research findings concluded that the use of artificial intelligence to process the vast amounts of data that companies deal with helped improve the quantity and quality of information disclosed, thereby enhancing corporate financial transparency.

Keywords: Big data analysis - artificial intelligence- financial transparency- Financial accountability.

Introduction

The large quantity of data contained in financial transactions, whether paper or electronic, requires storage and analysis using artificial intelligence techniques. This data may be unstructured or organized in a way that makes it difficult to obtain reliable and timely information.

The goal of processing this data may be to extract patterns, insights, and predictions that help in making more accurate and effective decisions, as well as improving transparency in financial reporting, can lead to enhanced trust among stakeholders and facilitate regulatory compliance. By leveraging advanced analytics and machine learning algorithms, organizations can not only streamline their reporting processes, but also uncover hidden trends that inform strategic planning and risk management; is crucial in today's rapidly changing financial landscape, as it allows organizations to proactively identify potential threats and opportunities.

By integrating these insights into their decision-making processes, companies can foster a culture of continuous improvement and adaptability. In this study, we introduce big data at processing using artificial intelligence and, Its Role in Financial Reporting Transparency.

According to Akter et al.(2016) Discuss enhancing company performance in line with its strategy using big data analytics capabilities. Researchers who used a multidimensional model comprising three basic sub-dimensions concluded that the use of these technologies provided capabilities that significantly improved company performance.

Wang et al. (2016) They believe that big data, which is growing daily and poses a challenge for the company to utilize in a way that provides important information about market patterns (competitors and consumers), as well as maintenance and servicing times for devices sold under warranty, will contribute to making fundamental decisions.

According to Rialti et al. (2019), who discussed the impact of big data analytics capabilities in companies on their financial performance, they concluded that the availability of technical skills among managers and employees will greatly contribute to maximizing the company's performance and market value.

Antwi et al.(2024) According to their findings, the use of artificial intelligence in corporate financial reporting mechanisms; will contribute to enhancing accuracy, and timeliness, as well as improving the quality of financial reporting, in a way that meets the growing needs of stakeholders .and a dynamic business environment. In addition, it will improve efficiency, transparency and financial accountability.

Salaa (2024) believes that artificial intelligence technologies and services play an influential role in the transparency of financial reporting, as artificial intelligence has contributed to identifying patterns of financial fraud in financial statements; accordingly, it will provide stakeholders with protection from financial losses related to fraud and error risks. Artificial intelligence also contributes to the provision of interactive financial reports according to user needs.

Shaban & Omoush (2025) argued that artificial intelligence has an impact on financial transparency and corporate governance, improving accounting practices in Jordanian companies. The researchers' findings showed that artificial intelligence contributes to enhancing the effectiveness of corporate governance and improving transparency, financial reporting accuracy, and risk management. In addition, it improves regulatory compliance with market requirements as a result of automating oversight and reducing errors in financial disclosures in an effective manner.

OWEIS (2025) researched Saudi companies to determine the role of artificial intelligence in developing accounting practices by automating daily operations and improving financial reporting. He concluded that the use of artificial intelligence contributes to improving accounting efficiency by reducing data processing time and enhancing the accuracy of financial reports. It also reduces the hours required to complete the audit process, develops fraud detection mechanisms, and improves decision-making.

2. Theoretical Framework

2.1. Big data analytics

Big data has its roots in the mid-1990s, and during a conference held in 2010, Google's CEO announced that the amount of data produced in two days was equal to the amount of data produced from the dawn of human civilization (i.e., from the beginning of blogging) until 2003 (Gupta et al.,2018:79). Big data analytics has been successfully applied in many diverse sectors (Ragini et al., 2018: 13) .

Big data (BD) has become a core business activity for businesses. Leveraging large, complex, and rapidly circulating data streams can radically transform strategic decision-making. Big data refers to data sets with such high diversity and velocity that they are difficult to process using simple traditional tools and techniques. These advanced data sets require sophisticated analytical methods and technologies to extract meaningful insights. As companies increasingly adopt big data analytics, they can enhance operational efficiency, improve customer experiences, and gain a competitive edge in their respective markets (Janssen et al., 2017:1), (Joubert et al.,2021:3).

(BD) analysis takes two basic approaches: big data and business analytics (BA), Big data refers to rapidly evolving data sets of enormous size and diversity, exceeding the capabilities of traditional data management. (BA) examines the skills, capabilities, technologies, and applications used to continually evaluate strategies and operations across the company to generate insights and guidance that inform business planning (Erevelles et al.,2016: 2), (Wang et al.,2016:100).

(BD) analytics has been defined as "a new generation of technologies, and frameworks designed to: generate economic value, from large amounts of diverse data, by enabling ultra-fast capture, discovery, analysis, and matching.

various recent studies indicate that: achieving high economic value from, big data analytics results, and the focused organizational deployment of these technologies within a company's operational structure, thus necessitating the development of big data analytics capabilities across the company (Jeble et al.,2018:1),(Mikalef et al., 2019:262). According (Nilashi et al.2023:6) Employing big data analysis technology enhances the level of accuracy and validity of decisions, and thus the quality of decisions in the company. According to the survey, the improvement rate is 49%. According (Lucivero,2020: 1011) Over the past ten years, big data analysis has received significant attention and support from policymakers and various stakeholders. This growing trend in big data is likely to be due to several technological developments, including the ability to collect vast amounts of data via mobile phones and the digitization of processes and services, such as banking or medical records.

According to (Lawrence,2022:1118) "Big data" refers to larger, more complex, machine-readable data than traditional data, which is often inefficient and requires new technologies for processing and analyzing data.

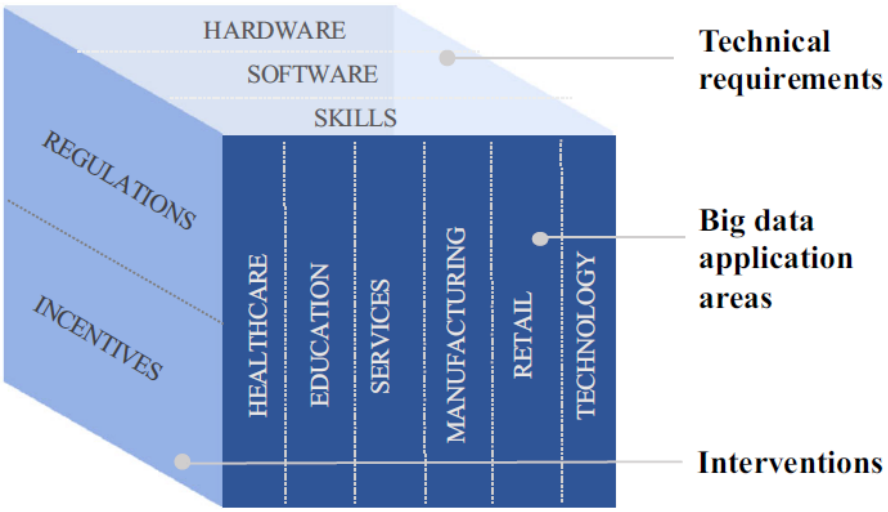

Fig. 1 Three-dimensional conceptual framework relating big data to development (Joubert et al.,2021:4)

2.2 Big data analytics and company value

Companies derive economic value from big data, according to numerous studies that have identified the opportunities offered by big data by referring to the so-called 3 Vs: volume, velocity, and variety. Since the emergence of the 3 Vs, others have added veracity (the amount of noise in the data) and granularity (and other features closely associated with big data technology). Furthermore, there is a need to formalize two social and technical attributes that define how companies derive value from big data: portability and interconnectivity (Günther et al., 2017:11) .

2.3 Artificial Intelligence (AI)

With the development of artificial intelligence, there is a new harmony between humans and machines. The question remains: How can humans and new artificial intelligence complement each other in the decision-making process? (Jarrahi, 2018:579).

There is no agreed-upon definition of artificial intelligence (AI), It is defined as the ability of a machine to learn from experience, adapt to new inputs, and perform tasks like those of humans.

The terms "artificial intelligence" (AI) and "artificial intelligence systems" (AI) were first coined in the 1950s. Since then, AI has experienced fluctuations with the rapid advancement of big data technologies, such as the shift to computer storage, then cloud computing, and the ultra-fast speed of data processing. AI is advancing thanks to the availability of big data and processing technologies (Duan et al., 2019:64).

Studies have shown that artificial intelligence has older roots than is currently known and crosses multiple fields of science and, philosophy back to ancient Greece. Its modern use dates back to the 1956 Dartmouth Conference, when the term “artificial intelligence” was formally discussed and defined as “the science and engineering of making intelligent machines.”(Collins et al.,2021:2). Artificial intelligence (AI) is a cutting-edge technology that is rapidly revolutionizing various aspects of human life, including business, society, and

the environment. The increasing use of digital computing devices and the emergence of the concept of big data have opened AI to significant opportunities for society and businesses (Ningsih et al.,2023: 379) .

Artificial intelligence is generally defined as computer systems and machines that integrate functions such as learning, problem-solving, and logical reasoning in a manner like human intelligence. In general, AI facilitates the creation of systems that operate autonomously, i.e., function entirely or in part on their own by utilizing machine learning algorithms and other technologies (Aldemir& Uysal,2025: 3) , (Al-Baity,2023:1).

2.4 Advantage Artificial intelligence technologies in accounting

Big Data Analytics (BDA) has become an important factor, that enhances and improves business efficiency, and effectiveness by optimally utilizing high operational and strategic capabilities.

Several recent studies have found a positive relationship between BDA and corporate performance.

BDA is now considered a "mechanism that distinguishes high-performing companies from low-performing ones," as the analysis enables companies to develop proactive strategies for the future (Wamba et al.2017:367), (Huang et al.,2020:3).

Artificial intelligence technologies offer three key benefits: First, it automates critical tasks, such as investigating repetitive, time-consuming issues or transactions.

Second, AI provides insights that, were previously trapped, in massive amounts of unstructured data that previously required human management and analysis, such as data from videos, images, written reports, business documents, social media posts, and emails. Third, AI enables the integration of thousands of computers and other resources to solve the most complex problems (Nishanta et al.,2020: 1). Artificial intelligence technologies can revolutionize the financial sector, by enhancing effectiveness and efficiency, reducing costs, and improving customer experience. Furthermore, AI can process massive amounts of data, providing insights, and insights that humans might overlook.

This data can also train machine learning algorithms, to predict future actions (Al-Baity,2023:5) ,(Sarker et al.,2019: 60).

Given the powerful capabilities and skills of artificial intelligence (AI), which are needed in many sciences and professions, accounting requires a variety of skills. When AI was introduced into accounting, it was controversial despite its significant impact on the accounting profession.

The goal is to create computerized systems that perform activities that require human cognition because they need diverse thinking, such as analyzing financial data and providing vital analyses to improve decision-making (Ahmad, 2024: 404).

Artificial intelligence is also changing the form and mechanism of accounting and financial operations for companies. Perhaps the most noticeable contribution of AI is in reducing the human burden in a profession that requires increasing effort, from data entry and record management to reconciliation and closing. All of these requirements aim to achieve more accurate, faster, and transparent financial data, which AI provides. Examples of accounting services include robotic process automation (RPA) and AI-powered technologies that make

work more efficient, such as OCR and NLP. These technologies enable AI systems to extract and evaluate data from contracts and invoices (OWEIS,2025:241).

2.5 Big data analytics and Artificial Intelligence

The concept 'big data' and advanced technical systems for data analysis can be understood or visualized within various corporate sectors, such as Apple, Google, Intel and Microsoft. Due to this amount of data, there was a need to create new systems (artificial intelligence systems) to be more dynamic and effective with stakeholders (Pappas et al.,2018:483).

In the age of digital globalization, today's business environment requires faster responses. There is an increasing focus on the changing world; these circumstances have contributed to many firms adopting new technologies in order to enhance performance and improve competitive advantage. Perhaps the most prominent of these technologies is artificial intelligence (Borges et al.,2020: 1).

The data analysis stage is the most important stage ؛after, collection, storage, classification, and mining. The need for analysis arises from the difficulty of interpreting the amount of data due to the variability and unreliability of sources. In addition, its traditional characteristics have evolved into relational databases (Nilashi et al.2023:16).

Consequently, is with regard to the huge amounts of data that require advanced storage and retrieval capabilities, as this data includes structured and unstructured types. Currently, the integration of algorithms, big data, and processing capabilities is generally referred to as 'machine learning' or, more broadly, artificial intelligence.' (Elhoseny et al., 2020:485), (Shehata et al., 2024:486).

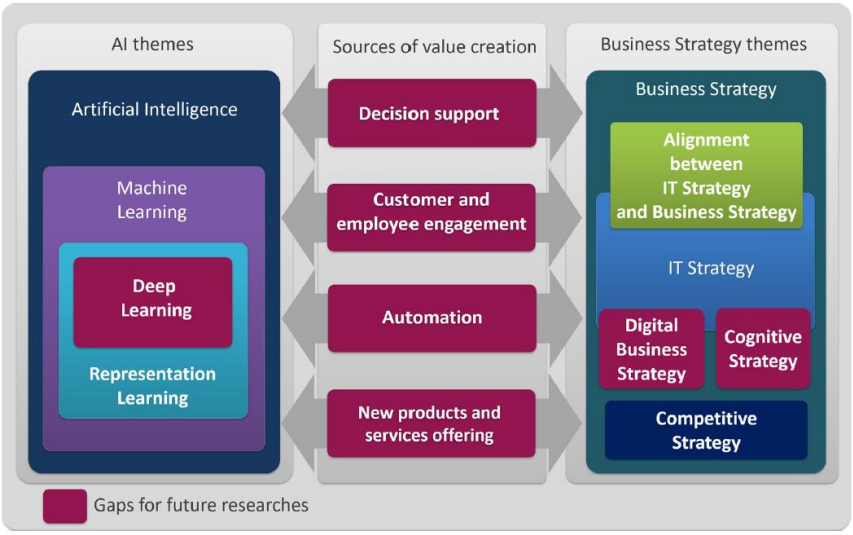

Fig.2 The relationship between artificial intelligence, value creation, and corporate strategy (Borges et al.,2020: 11).

2.6 Financial accountability

A concept that illustrates the company's commitment to informing stakeholders about how it manages its financial resources and uses them to enhance its financial performance. This concept has become important in the business and governance environment, as transparency

and financial accountability are two sides of the same coin: governance (Pratiwi et al.,2024:1167) .

Accountability has a greater impact, than transparency on the quality of financial reporting. In addition, the extent of financial accountability is critical to ensuring accuracy, credibility, reliability and compliance with applicable accounting standards (Sipahutar et al.,2025:5).

2.7 Financial Reporting & AI

The financial statements reported by companies provide accounting information that is extremely important, for investors, in making their decisions, in order for stakeholders to benefit from this information, it must be relevant to their needs. It must correct or confirm their past, present or future economic decisions (Achmad & Pamungkas,2019:136) .

With machine learning technologies, predicting and studying financial crises has become easier, as financial forecasting can be done using computing models available to companies (Sezer et al.,2020:2) .

Furthermore, integrating artificial intelligence technologies into the area where the company wishes to improve performance can be easily achieved, by providing quick, and timely information (Alenezi & Faisal ,2020: 7).

Various circumstances have contributed to the need for artificial intelligence as an advanced technology in corporate financial reporting. These circumstances or challenges include transparency, and accountability as fundamental pillars of modern economies, the large volume of data, and the growing need for reliable, accurate, and timely financial information (Antwi et al., 2024: 208).

The reporting framework ensures consistency, transparency and accuracy to provide an appropriate structure for decision-making (Kumar & Santra ,2025:74).

2.8 Governance

Corporate governance represents the system of managing and controlling companies. It includes the mechanisms, processes, and procedures that serve the interests of stakeholders, protecting and maintaining the integrity and efficiency of financial and administrative operations.

Governance also ensures accountability, which involves holding individuals and groups within an organization accountable for their actions and decisions (Efunniyi et al.2024: 1599).

The concept of governance also means the efficiency and effectiveness of managing the resources, which necessitates the delegation of authorities to the corporate board of directors and its executive officers, with the aim of protecting the rights of stakeholders. The Institute of Internal Auditors defines governance as ‘the specific procedures that govern the processes overseen by stakeholders to provide oversight and evaluation of management, respond effectively to risks facing the company, and ensure the adequacy of controls and regulations to achieve its objectives and maintain the company's value’ (Malak et al.2025:28).

2.9 Transparency

The basic assumption associated with reliable perception is related to the quality and transparency of information, which depends primarily on the quality of data, and the possibility of improvement through effective and efficient data processing(Wanner & Janiesch,2019: 155).

Transparency is defined: as the openness in providing information related to the nature of a company's business, in a way that enables stakeholders to evaluate performance and the use of resources fairly and responsibly (Pratiwi et al.,2024:1169).

Financial transparency: is a cornerstone of effective corporate governance, and the integration of artificial intelligence (AI), plays a crucial and effective role in enhancing it within companies. Furthermore, studying how AI can contribute to improving financial transparency has become a key aspect of today's research (Efunniyi et al.2024:).

Artificial intelligence enhances financial transparency, with indirect impact on executives, and board decision-making. It provides highly accurate, and timely financial information, that enables executives to make accurate decisions, informed by a broad understanding of the company's financial position.

Furthermore, AI offers predictive analytics that provide valuable insights into a company's future trends, thereby assisting executives in formulating strategies that address long-term sustainability and growth objectives (Shaban & Omoush,2025:3).

Financial transparency: is an important requirement for ensuring the efficiency of financial markets and, protecting investor rights. Various tools can be used to enhance financial reporting transparency, including ISAB, external audit, and government regulation. Artificial intelligence technologies also contribute to improving and enhancing financial reporting transparency (Salaa ,2024: 431).

3.Research Methodology

3.1 Study Tools Description

To measure big data analysis using artificial intelligence, and financial transparency, after reviewing a number of literatures that dealt with these variables, we conclude that some researchers used: specific indicators within a certain set.

Accordingly, a list was prepared that included three main groups of indicators, to measure the independent variable, which are management capabilities, technical capabilities, and management of tangible and intangible assets, within these three core indicators, there are 10 sub-indicators.

To measure the dependent variable: financial transparency, five basic indicators were developed (governance, disclosure, investor confidence, timeliness of financial statements, and financial analysis). Within these primary indicators, there are also 10 sub-indicators.

The Research sample: Three banks were selected from the Iraq Stock Exchange, some of which had been applying international Financial Reporting Standards (IFRS) before 2016, the year the Iraq Stock Exchange mandated that all banks, and other financial institutions, adopt International Financial Reporting Standards (IFRS).

Financial data for the three banks in the sample, covering the years 2014-2024, were analyzed to determine the impact of big data and artificial intelligence technologies on enhancing

financial transparency (the dependent variable). This was analyzed using multidimensional indicators. Qualitative indicators included governance, disclosure, investor confidence, and the timeliness of financial statements, which were converted into percentages. Quantitative indicators consisted of a financial analysis that included three profitability indicators: profit margin ratio, trading volume, and return on equity. These three indicators also reflect financial transparency. A final formula will be developed for the transparency variable. metrics are used:

$FTI_{it} = \beta_1 . G_{it} + = \beta_2 . D_C + = \beta_3 . IC_{it} + = \beta_4 . TFS_{it} + = \beta_5 . f(PMR_{it}, LR_{it}, ROE_{it})$

$$f(PMR_{it}, LR_{it}, ROE_{it}) = \frac{1}{3}\left(\frac{PMR - PMR\,min}{PMR_{Max} - pmR_{min}} + \frac{LR - LR\,min}{LR_{Max} - LR\,min} + \frac{ROE - ROE\,min}{ROE\overline{max} - R_{OEmin}}\right)$$

The final formula for all variables:

$FTI_{it} = \alpha + \beta . BD\_AI_{it} + E_{it}$

3.2 Aims of Study

The research aims to identify and determine the role that artificial intelligence has played in processing big data in enhancing the financial transparency of companies listed on the Iraq Stock Exchange by designing a list that includes a set of quantitative and qualitative indicators.

3.3 Problem and hypotheses of the study

Given the vast and massive volume of data that companies deal with today, the task of analysis has become arduous and costly. This necessitates the availability of technologies that contribute to the rapid and continuous analysis of the data available to the company in various fields that affect its disclosure, financial reporting, or financial transparency. From this perspective, the research problem is expressed in the following question:

What is the role of using artificial intelligence in processing big data in enhancing the financial transparency of the company?

Based on the above problem, the current study will test the following hypothesis

(a) H0: There is no influence of using artificial intelligence in processing big data in enhancing financial transparency.

(b) H1: There is influence of using artificial intelligence in processing big data in enhancing financial transparency.

4.Results and discussion-Results

4.1 Measuring Study Variables

1-Dependent variables:

financial transparency, five main indicators were developed (governance, disclosure, investor confidence, timeliness of financial statements, and financial analysis).

2- Independent variables:

which are management capabilities, technical capabilities, and management of tangible and intangible assets. Within these three main indicators, there are 10 sub-indicators: A-Management Capabilities: 1-Planning (through a plan or future forecasts)

2-Investment (the presence of an investment plan or expansion through new branches or new production lines) 3- Coordination (the presence of periodic meetings to discuss the company's plans and programs). 4- control (the presence of periodic meetings, performance reports, or coordination through audit committees).

B- Technical Capabilities: 5- Communication (the presence of an electronic program for work and communication between management and employees, or the company and customers). 6- Security (the presence of programs and a plan to protect user data).

7-Data Management (the presence of advanced websites with applications tailored to the nature of the company's work). 8-Financial Analysis (the presence of performance indicators attached to the financial statements or charts illustrating performance development).

9- Knowledge Management (the extent to :C- Tangible and Intangible Asset Management which experience, and reputation are leveraged to attract customers through business

10- Employee Training (training employees and workers .expansion and increased sales) on electronic programs and modern technologies)

Table (1) The following indicators can be used to measure companies' use of big data technology with artificial intelligence:

No.	Indicators	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A- Management Capabilities:												
1-	Planning (through a plan or future forecasts)											
2-	Investment (the presence of an investment plan or expansion through new branches or new production lines)											
3-	Coordination (the presence of periodic meetings to discuss the company's plans and programs)											
4-	control (the presence of periodic meetings, performance reports, or coordination through audit committees)											
B- Technical Capabilities:												
5-	Communication (the presence of an electronic program for work and communication between management and employees, or the company and customers).											
6-	Security (the presence of programs and a plan to protect user data).											
7-	Data Management (the presence of advanced websites with applications tailored to the nature of the company's work).											
8-	Financial Analysis (the presence of performance indicators attached to the financial statements or charts illustrating performance development).											
C- Tangible and Intangible Asset Management:												
9-	Knowledge Management (the extent to which experience and reputation are leveraged to attract customers through business expansion and increased sales).											
10-	Employee Training (training employees and workers in electronic programs and modern technologies)											
Total Indicators (BA_AI)100%: **Region Trade Bank**		50	80	100	100	100	100	100	100	100	100	100
Bank of Baghdad		70	100	100	100	100	100	100	100	100	100	100
International Development Bank (IDB)		--	--	90	90	100	100	100	100	100	100	100

Show Table (1), the indicators of the three companies in the research sample in the 11 years that were selected before and after the application of International Financial Reporting Standards (IFRS) show that there is a development in big data and the use of artificial intelligence in processing, as the indicators in the table showed a high percentage, as these companies have a large use or employment of artificial intelligence technologies in processing the big data that they deal with in the field of management capabilities, technical capabilities and the management of tangible and intangible assets. Perhaps this explains the high financial transparency as in Table (2) and (3).

$$FTI_{it} = \beta_1 . G_{it} + \beta_2 . D_C + \beta_3 . IC_{it} + \beta_4 . TFS_{it} + \beta_5 . f (PMR_{it}, LR_{it}, ROE_{it})$$

FTI= financial transparency Index

G= governance

D= disclosure

IC= Investor confidence
TFS= Timing of financial statements
f= normalization function for financial ratios
PMR=profit margin ratio
LR=liquid ratio
ROE=Return on Equity

$$f(PMR_{it}, LR_{it}, ROE_{it}) = \frac{1}{3}\left(\frac{PMR - PMR\min}{PMR_{Max} - pmR_{min}} + \frac{LR - LR\min}{LR_{Max} - LR\,min} + \frac{ROE - ROE\min}{ROEmax - R_{OEmin}}\right)$$

The final formula for all musure variables:

$$\mathbf{FTI\,it} = \boldsymbol{\alpha} + \boldsymbol{\beta}\,.\,\mathbf{BD\_AIit} + \mathbf{Eit}$$

BD_AI= Big data_ Artificial intelligence
Eit =error term
The financial transparency index was calculated as follows:
1- Qualitative indicators, which include seven indicators, each weighted at 10%, three of which relate to governance, two to disclosure, and one to investor confidence.2- The quantitative indicators, which are three indicators related to profit margin, trading ratio and return on equity, each with a weight of 10 points, for a total of 30 points. The overall index was calculated using an equation that combines the qualitative and quantitative indicators according to their weights.

Table (2) Indicators for measuring independent and dependent variables and methods for their calculation

YEARS	profit margin ratio	current ratio	ROE	LR_{it}	ROE_{it}	PMR	FA 0.30	G_D_IC_TFS 0.70	BD_AI% indicators	FTI%
2014	25.255	1.649	0.009	2.340	0.000	0.080	0.807	10	50	38
2015	26.952	1.534	0.010	2.138	0.003	0.099	0.747	10	80	59
2016	56.046	1.513	0.021	2.101	0.047	0.418	0.855	20	100	76
2017	50.031	1.898	0.020	2.779	0.046	0.352	1.059	30	100	79
2018	38.528	1.321	0.009	1.763	0.000	0.226	0.663	30	100	79
2019	30.175	1.021	0.013	1.235	0.013	0.134	0.461	30	100	79
2020	17.924	1.155	0.026	1.471	0.067	0.000	0.513	40	100	82
2021	24.492	1.132	0.029	1.431	0.081	0.072	0.528	50	100	85
2022	17.929	1.094	0.033	1.364	0.098	0.000	0.487	50	100	85
2023	42.143	1.094	0.113	1.364	0.427	0.265	0.686	50	100	85
2024	58.270	0.319	0.126	0.000	0.481	0.442	0.308	70	100	91
2014	42.940	1.153	0.112	0.063	0.132	0.389	0.195	40	70	61
2015	8.069	1.496	0.025	0.287	0.012	0.000	0.100	40	100	82
2016	27.499	1.250	0.072	0.126	0.077	0.217	0.140	40	100	82
2017	11.314	1.309	0.022	0.165	0.009	0.036	0.070	40	100	82
2018	11.354	1.287	0.016	0.150	0.000	0.037	0.062	40	100	82
2019	18.298	1.136	0.027	0.052	0.015	0.114	0.060	40	100	82
2020	33.360	1.057	0.073	0.000	0.078	0.282	0.120	50	100	85
2021	36.137	1.226	0.097	0.111	0.111	0.313	0.178	60	100	88
2022	22.706	1.212	0.152	0.101	0.187	0.163	0.150	70	100	91
2023	66.544	1.212	0.329	0.101	0.428	0.653	0.394	70	100	91
2024	65.983	1.185	0.422	0.084	0.555	0.646	0.428	70	100	91
2015	47.008	1.364	0.063	0.196	0.028	0.646	0.290	10	80	59
2016	39.670	1.512	0.061	0.308	0.196	0.474	0.326	70	90	84

2017	32.129	1.466	0.047	0.274	0.132	0.297	0.234	70	90	84
2018	24.908	1.410	0.029	0.231	0.046	0.127	0.135	70	100	91
2019	19.917	1.327	0.019	0.168	0.000	0.010	0.059	70	100	91
2020	33.180	1.319	0.048	0.162	0.137	0.321	0.207	70	100	91
2021	34.801	1.186	0.058	0.062	0.183	0.360	0.201	70	100	91
2022	19.501	1.185	0.043	0.061	0.113	0.000	0.058	70	100	91
2023	41.430	1.105	0.146	0.000	0.598	0.515	0.371	70	100	91
2024	42.556	1.173	0.129	0.052	0.518	0.542	0.370	70	100	91

Table 2 shows the first 11 years for the Commercial Bank of the Region, followed by the Bank of Baghdad and the International Development Bank. Then, the profit margin ratio for each year and each bank was calculated in order to extract the PMR, extract the trading ratios to arrive at the LRit, and then extract the return on equity. These three indicators represent the financial analysis, which is the last part of financial transparency and has a weight of 30%, the dependent variable.

The remaining indicators for the same variable were converted to percentages and given a weight of 70%, as was the G_D_IC_TFS column. The sum of these indicators is in the FTI% column.

The independent variable of big data and artificial intelligence is represented by the BD_AI% column.

indicators.

We note from Table 2 that big data processing indicators have developed rapidly in the sample companies, as they are financial companies that deal with large amounts of data. We also note that financial transparency has developed and reached an, excellent rate of 91% in two companies.

Table 3 Correlation coefficients between variables

Correlations			
		FTI	BD_AI
Pearson Correlation	FTI	1.000	.897
	BD_AI	.897	1.000
Sig. (1-tailed)	FTI	.	.000
	BD_AI	.000	.
N	FTI	32	32
	BD_AI	32	32

Table 3 shows the correlation coefficient between the independent variable and the dependent variable. The correlation is very strong and positive, indicating a strong positive relationship.

Table 4 Evaluation of the relationship between the independent variable and the dependent variable

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.897[a]	.804	.797	5.40636	.804	122.871	1	30	.000
a. Predictors: (Constant), BD_AI									

The variance ratio of 80.4% in financial transparency, which explains the analysis of big data using artificial intelligence, is either the determination coefficient, which takes into consideration the number of variables studied and the sample size, confirming the strength of the model prepared to measure the relationship between variables, reaching 0.797, The F-test, which reached 122.871, indicates the significance of the model and its statistical significance.

4.2 Results and Testing of Study Hypotheses

Table 5 Linear regression coefficients between BD_AI and FTI

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-11.272-	8.455		-1.333-	.192
	BD_AI	.974	.088	.897	11.085	.000
a. Dependent Variable: FTI						

Table 5 shows that the independent variable, big data, has a strong and significant effect on the dependent variable, financial transparency (FTI), as the standardized regression coefficient (Beta = .897) indicates a strong relationship, and the Sig. value = .000 confirms the significance of this effect. We therefore rejected the zero hypothesis and accepted the alternative hypothesis, which means that, according to the current research model, financial transparency depends primarily on BD_AI. The significance level is very high (Sig. = .000, which is less than 0.0001). The t-test value was 11.085, which is very high, indicating that BD_AI has a significant effect on FTI. The regression model can be formulated according to the following equation:

$$\mathbf{FTI} = \mathbf{-11.272} + \mathbf{0.974}.\mathbf{BD\_AI} + \mathbf{.088}$$

5- Conclusions and recommendations

Based on the analysis of data and models of firms and previous literature on research variables, it can be said that:

Big data analyzed using machine learning techniques and expressed through artificial intelligence has contributed significantly to improving financial transparency and revising its concept according to several variables. Big data analysis also provides accurate, highly reliable, and timely indicators based on various sources related to customer behavior patterns, competitors, the market, financial crises, strengths and weaknesses, and opportunities and risks in the business environment surrounding the company. Advanced analysis using artificial intelligence technologies helps detect fraud or errors and assess the level of risk based on mathematical models that rely on continuous learning behavior. Furthermore, the benefits of big data and artificial intelligence include enhancing accountability and transparency, which are two key elements of governance. As a result, governance will be enhanced, helping organizations achieve their goals. All these benefits and more suggest that organizations should:

develop big data analysis infrastructure and expand the use of artificial intelligence in a rapidly evolving business environment if they want to achieve sustainability and maximize their value.

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Appendix A Financial transparency: Financial transparency is measured according to the following indicators:

No.	Indicators	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A- Governance												
1-	Existence of a guide for ethical conduct.											
2-	Existence of a guide or performance evaluation form.											
3-	Extent of compliance with international accounting standards.											
B- Disclosure												
4-	Quality and adequacy of financial disclosure.											
5-	Availability of non-financial disclosure.											
C- Investor confidence												
6-	Stability of the closing share price at the end of the year.											
D- Timing of financial statements												
7-	Adherence to the timings set by the market for submitting financial statements.											
E- Financial analysis												
8-	Profitability ratios (profit margin ratio)											
9-	Liquidity ratios (current ratio)											
10-	Return on equity (ROE) is a financial performance											
total	Total Indicators100 %											