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Integration of Artificial Intelligence and Blockchain in Accounting: Towards Enhancing Transparency and Reducing Information Asymmetry

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Abstract: The issues of transparency and information asymmetry have been dominant in the accounting literature. These two notions are very important in boosting the confidence of accounting systems and financial market. Meanwhile, artificial intelligence (AI) has the potential to process, analyze, predict, and improve massive databases. Conversely, blockchain technology has gained significant importance due to its decentralization, security, and confidentiality, making these two technologies crucial to the field of accounting. This paper will focus on examining how such integration of the two technologies has improved the situation in terms of enhancing transparency and decreasing information asymmetry within the accounting setting. To address the objectives and to test the hypotheses, a descriptive-analytical approach was adopted, and 140 questionnaires were used in collecting the data. The present paper shows a number of conclusive factors concerning the importance of integrating AI and blockchain to enhance information transparency and reduce asymmetry of information. Furthermore, the integrating of the technologies opens new possibilities of data processing that could not be realized by a particular technology on its own, and each integrating technology has the potential to augment the strengths of the other, generating a more complete picture of financial data. The paper suggests developing clear regulatory frameworks for the utilization of these technologies in accounting to follow its orders and to ensure data protection. Also, it underlines the importance of training professionals in accounting and auditing to use AI and blockchain technologies in the best possible way and benefit the most from them.

Keywords: Artificial Intelligence, Blockchain, Accounting, Transparency, Information Asymmetry

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1. Introduction

Over the past decades, the world has witnessed countless financial and accounting collapses of large corporations. Research on these crises has revealed that among the main factors leading to them are low levels of transparency and increasing information asymmetry among stakeholders. Consequently, researchers and policymakers need to address this issue, given its significant impact on the quality of financial and economic decisions.

Low levels of transparency represent a major challenge for all stakeholders due to the limited usefulness of the information obtained and its ineffectiveness in meeting their needs.

According to Scott, information asymmetry is undoubtedly the most important concept in financial accounting theory [1]. The concept originated from agency theory and occurs when information is available to one party but not to another. As a result, most users of accounting information are unable to access the data required for decision-making. Based on the contractual relationship between principal and agent, as described by agency theory, information asymmetry appears as one of the factors that limit efficient communication between the two parties, leading to problematic decision-making.

At the same time, the early XXI century has been characterized by such unprecedented technological innovations. Artificial intelligence (AI), and blockchain, have become a formidable force that can transform a variety of areas, accounting included. By integrating AI and blockchain, the two technologies create a synergetic effect increasing the benefits of each other. Blockchain provides the security, transparency and integrity of financial data since the ledger is decentralized and AI offers predictive power and much deeper insights through analytical and automation ability. Their potential together can transform the accounting profession [2], as it will deliver numerous advantages and reduce the informational gap between the users of the financial information by enhancing the level of transparency.

This study represents an attempt to investigate the effect of the integrating of AI and blockchain that can be used to improve the transparency, as well as reduce the level of information asymmetry that exists within the accounting context.

Although the great potential of this integration to restructure the accounting profession has been observed, the studies specifically concerning the combined utilization of these technologies with the purpose of enhancing financial transparency to minimize information asymmetry in business practice are still scarce. The literature gap offered the impetus behind the current research.

2. Materials and Methods

2.1. Research Problem

There are various challenges in the financial markets as a result of the low level of transparency, information asymmetry, and lack of equitable information distribution among the different interested parties in the financial activities. These complications have adverse impacts on decision-making, reduce market efficiency, and increase disparity of trust between the management and the investors.

In the digitalization of accounting, a lot has been offered. In this way, the current work will implement the integration of artificial intelligence and blockchain to overcome the stated challenges. The following central question covers that of the research problem:

To what extent does the integration of artificial intelligence and blockchain contribute to enhancing transparency and reducing the information gap in accounting systems?

2.2. Research Objectives

The research seeks to:

1. Explain how AI can make accounting processes easier, improve clarity in the financial statement, and minimize asymmetry of information, and thus lead to rational decision-making.
2. Examine how blockchain technology and its distinctive characteristics could help increase levels of transparency and alleviate information asymmetry.
3. Show how cutting-edge solutions that increase transparency and lessen information asymmetry can be created by integrating of blockchain technology with the analytical powers of artificial intelligence.

2.3. Research Hypotheses

The present study gives an opportunity to test the following hypotheses:

- H1: There is a significant relationship between the integration of AI and blockchain and transparency.
- H2: There is a significant relationship between the integration of AI and blockchain and information asymmetry.
- H3: There is a significant impact of integrating AI and blockchain on transparency.

- o H3a: AI has a significant impact on transparency.
- o H3b: Blockchain has a significant impact on transparency.
- H4: There is a significant impact of integrating AI and blockchain on information asymmetry.
- o H4a: AI has a significant impact on information asymmetry.
- o H4b: Blockchain has a significant impact on information asymmetry.

2.4. Research Importance

Digital transformation is becoming of higher interest to accounting literature. Using this research, focus is brought forth on how AI and blockchain can be used to ensure transparency and decrease information asymmetry. The blend of these two technologies is also a new innovative solution to the extent that these technologies have distinct peculiarities and each of them simply possesses its benefits.

The paper will contain much value to those conducting the research and stakeholders because it gives some insight on accounting practices. These results could also be applied to businesses to enhance transparency and promote information symmetry in order to make information equally accessible and make market participants develop more trust towards each other.

2.5. Methodology and Data Collection

The analysis of the research was based on the descriptive-analytical approach. The questionnaire was created relying on the past studies, it included 47 items, which covered four dimensions, and questions were modified to correspond to the local environment. The hypothesis was to determine the correlation between the independent variables- Artificial Intelligence (AI), which will be evaluated regarding [3], and Blockchain, which will be assessed regarding [4], with the dependent variables, which will be transparency that will be evaluated regarding [5], reducing information asymmetry that will be measured regarding [6]. Analysis of data collected was done using statistical software.

2.6 Previous Studies

1. **(Kanaparthi, 2024):** This paper is concerned with the deep effects of the ongoing innovations on the financial and business domains which bring about changes of basic practices. These innovations include artificial intelligence (AI), blockchain, and machine learning (ML). The purpose of the study is to gauge the extent of the integration of blockchain, AI and ML in the financial accounting practice. It observes that the implementation of blockchain and ML has already established a radical change in financial accounting that has the promise of lower accounting cost, high accuracy, and support of financial reporting in real-time, as well as enhanced speed to conduct auditing. Regarding the role of AI, the major contribution that it produces is through automating routine accounting processes that companies should not hire new employees to perform, mitigating the expenditures and increasing the efficiency. The research finds that organizations are becoming dependent on blockchain and artificial intelligence in accounting and financial processes [7].
2. **(Hossain et al., 2024):** The paper addresses how the accounting practice has been affected having a huge impact by artificial intelligence and blockchain. The analysis was developed through a multi-method design, consisting of case studies and semi-structured interviews with the experts of the domain to identify key themes, such as automation and efficiency, data reliability and accuracy, fraud detection, and security strengthening, the evolution of professional skills, and ethical and regulatory concerns. The findings demonstrated that while blockchain guarantees the accuracy and reliability of financial records, artificial intelligence (AI) boosts productivity by automating time-consuming tasks and enhancing fraud detection. However, the paper identifies some of the problems related to incorporating the technologies in established systems. The paper acknowledges that accountants need to obtain new knowledge, specifically in the field of data analytics and technology management, and, at the same time, concludes that any regulatory protocols should be created to allow the implementation of innovations since

it will be the stimulus that will enable accountants to acquire new skills [8].

3.(Bin-Nashwan et al., 2025): The purpose of the study was to explore empirically the factors that would influence the approach of adopting artificial intelligence in firms providing accounting and auditing services and the contribution it can make in narrowing down the information asymmetry, facilitating the efficiency of the audit process as well as enhancing the accuracy of financial statements. By applying an integrated TOE-TAM-RDT model and analyzing data using PLS-SEM, the study found that AI adoption is driven by competitive pressure, relative advantage, top management support, AI readiness, and an innovative organizational climate. The integration of high-quality AI-based systems in firms had a positive impact on audit efficiency and financial reporting accuracy but a negative impact on information asymmetry. Findings also indicate that there is a moderate impact of big data governance. These results prove that appropriate data management, data quality, and ethical application in companies may enhance the advantages of using AI even more [9].

3. Results and Discussion

Theoretical Aspect

3.1 Artificial Intelligence (AI)

AI has become particularly prominent in the middle of the 20th century after the first experiments were performed in order to check and categorize the intelligence of the computers. Since then, scientists all over the world have strived towards the development of software and intelligent systems that can replicate human functions including thinking, learning and making of decisions. The result of this development was the modern machine learning [3].

The concept of AI in the contemporary digital setting is explained as the ability of machines, computer applications, and systems to think and execute human-like intellectual and creative tasks, seek independent solutions to problems, and derive conclusions and make decisions [10]. The other definition refers to it as the actual, physical capacity of machines or other artificial agents to solve problems, communicate, interact and reason rationally, similar to human beings [11].

AI is hence viewed as an umbrella term that encompasses big data analytics, advanced machine learning algorithms and predictive modeling [12].

Nowadays, the AI systems can carry out the work that can be described as simulation of the human cognitive functions, including the pattern recognition and data analysis on the large scale. These developments affirm that AI can offer creativity and efficiency in dealing with complex issues and has access to enormous digital knowledge bases.

3.2 Blockchain

The fourth industrial revolution has caused significant changes to the business environment, and blockchain is one of the most widespread innovative technologies in the recent years. Blockchain is a game changer in the information technology, and it is essentially transforming digital processes, and creating the premise on which major transformations in industries will occur.

The concept of blockchain can be described as follows: blockchain is a chain of data records interconnected by cryptographic methods (blocks), and this allows managing the entire history of transactions with the help of a decentralized public registry [13].

This technology is grounded on three fundamental concepts, which include: decentralization- activities take place without a central node, transparency- data is publicly shared among all the members of the network, and data protection- data cannot be manipulated, deleted, or changed; the network nodes perform the verification [14].

Since blockchain has methods of trust and consensus algorithms within a global computer network, it does not need a central access control mechanism. It guarantees security of data, transparency and immutability, and requires the absence of mediators and creates confidence among the market participants [15].

Blockchain is made up of four components: [16]

a. Hash: a special digital signature which connects blocks in a sequence and eliminates interference.

- b. Data: This is the list of instructions or transactions that were carried out in a block.
- c. Block: a unit, a basic component having a collection of transactions.
- d. Timestamp: indicates the time when the transaction was made in the chain.

3.3 Transparency

Transparency in accounting has emerged as the key to economic stability and enhanced confidence in financial markets especially during crises and technological innovation. Transparency, which once was regarded as a classical accounting concept, has become a strategic pillar to contemporary business performance and business sustainability.

The stakeholder theory tells that transparency is the key to the fulfillment of expectations of all parties involved. It helps the stakeholders evaluating financial position of a company, it increases confidence among investors, and assists in sound decision-making. Transparency is also known to enable boards of directors to assess the effectiveness of resources management and react promptly to the decline of the financial situation [17].

Business organizations are supposed to make a prompt disclosure of all information that is pertinent. Transparency makes a firm more appealing to investors and is dictated by the management capacity, and readiness to divulge the information that is relevant to investors [18]. Stakeholders consider firms that are reputed to be transparent as more trustworthy and positive [19].

Basically, transparency means disclosing financial and non-financial information to the stakeholders while withholding only what may directly harm the company's legitimate interests.

3.4 Information Asymmetry

In a general sense of the term accounting information is quantitative and non-quantitative information regarding economic events, contained in published financial statements or other reports. This is done in order to minimize the degree of uncertainty in economic activity. The reasons as to why there has been increased interest in accounting information in the recent past include the diversification and the variability of the business operations and risks associated with venturing in business. The necessity to mobilize the role of the stock market as the main source of financing the project also presupposes the broadening of the information requirements to assess all corporate performance aspects with the aim to enhance the quality of investment decisions.

Using accurate and reliable information is the basic requirement of investors at the time of making decisions. Poor investment decisions may however be made due to the unequal access to information in financial markets and this may lead to loss [20].

Information asymmetry occurs when either party of a transaction is driven by better or more information than the other party and this leads to uncertainty, inaccuracy, and imbalance [21]. The problem is explicable under the agency theory which is the secession of ownership and management. The concept of agency can be described as a contractual relationship of two parties where the manager (the agent) is supposed to act in the best interest of the owner of the company (the principal). In the case of the company whose capital is shareholders, the agency relation will be the shareholders (the principal), the CEO, and the managers (the agent), with the agent is supposed to take decisions, which would be in the best interest of the principal [22]. Agency theory assumes that the separation of unit owners and their managers may create an agency problem, particularly when their interests conflict. This conflict of interests is occasioned by the fact that management is at times interested in maximizing its interests at the cost of the owners. Investors and other stakeholders normally concentrate on the agency problem [23]. Such an imbalance leads to opportunistic behavior, lack of trust between the buyers and the sellers and can eventually lead to a market failure.

3.5 The Impact of Artificial Intelligence on Transparency and Information Asymmetry

Artificial intelligence (AI) is a groundbreaking technology which is used to imitate the human intelligence and cognitive capabilities giving the user a host of benefits. The knowledge of computers grew, storage capacity has increased, and AI has been flourishing during the last 20 years [24]. This has led to the gradual incorporation of AI by accountants to carry out different functions, thus becoming an essential part of accounting.

The last few years have been characterized by impressive advances in the area of AI application and thus, great enhancement of accounting practices. In the example, according to Salaa, the AI systems provide high reliability and transparency to financial reports, enhance corporate governance, and increase investor confidence. The other area in which AI can enhance the accessibility and clarity of financial information is interactive financial reporting, which is designed to meet the needs of users [25].

The role of AI in accounting is rather varied and can enhance the quality of data and facilitate the making of rational decisions. Big data analytics is one of the most vital mechanisms. Despite the fact that the term big data is quite recent, it has become common to denote virtually every cover of the human activity. The use of international technology especially the internet has facilitated the accumulation of huge volumes of information [26]. Big data analytics enables managers to have accurate and timely financial information, improve transparency, and decrease the agency costs by decreasing the risk of using opportunism or manipulating reports [27].

A major aspect of fraud detection involves machine learning algorithms that can analyze a great amount of data to identify patterns that are unusual. Predictive analytics is a statistical, machine learning, and data mining approach that assists organizations to predict trends and events based on the identification of hidden patterns and relationships in large quantities of data [28]. This predictive power facilitates the evidence-based decision-making process.

Moreover, AI is also applied to robotic process automation (RPA), or the automation of repetitive accounting functions, like data entry, reconciling, and reporting. This liberates accountants to engage in strategic processes with significant enhancement of efficiency and precision in preparing financial reports [29]. Real-time reporting becomes also a possibility with the help of RPA since the financial reports could be automatically generated and updated by AI systems, which could provide direct insights to make immediate decisions.

3.6 The Impact of Blockchain on Transparency and Information Asymmetry

Blockchain is a modern technology in accounting, which is regarded as the future of the profession. It enables the storage of all information that concerning transactions to be stored safely and in a transparent manner thus transactions without the middle intermediaries. This positions blockchain as a cornerstone of the decentralized digital revolution.

The reason behind its adoption in accounting systems is its main characteristics of decentralization, immutability, and transparency, which cover the deficiencies of conventional accounting practices [15].

Blockchain employs a shared ledger in place of the traditional double-entry method of accounting. The blockchain ledger eliminates the need for two sets of books (double-entry bookkeeping) by recording accounting entries for both parties to a transaction. As trust moves from a central authority to the blockchain users, a decentralized network of trustworthy ledgers is thus established [30].

Since blockchain has total transparency, as pointed out by Abad-Segura et al, all stakeholders can access the accounting records securely; hence, the integrity of data and trust through the blockchain. Blockchain lowers the likelihood of fraud and accounting mistakes by avoiding the involvement of intermediaries and any central control [31].

The technology also expedites preparation of financial and even non-financial reports, reduces the delays in disclosing them and makes them accountable. This minimizes the information gaps between the stakeholders and management [32]. Additionally, blockchain makes it impossible to interfere with the system and create conflicting interests, which increases the sense of trust and guarantees the safety and accessibility of data [33].

In addition, smart contracts, which are self-executing and coded into blockchain add to real-time monitoring and automation. The contracts may also be interjected on conditions, which they respond to by executing given actions, like tracking of transactions beyond thresholds or ensuring conformity [34]. Smart contracts reduce the risks of opportunistic behavior and ensure the integrity of the system as they provide verifiable outputs, accountability and improved level of process control [35].

Implications of Integrating Artificial Intelligence and Blockchain in Accounting for Transparency and Information Asymmetry

The combination of artificial intelligence (AI) and blockchain has completely transformed the accounting profession in its entirety. This integration has reduced errors in the accounting information, re-engineered the accounting process and strengthened the framework of the profession with regards to the technological development.

The importance of such integration is that individual drawbacks in this technology are eradicated. On the one hand, the AI suffers from issues related to privacy, poor quantities of data, explainability and reliability. Instead, blockchain is deficient in scalability and efficiency issues. The integration of the two technologies can ease the weaknesses of each technology by taking advantage of the strengths of the other technology [36].

The reliability and interpretability of AI systems can be improved with the help of the transparency and immutability of blockchain. AI has received criticism in particular as being a black box, particularly in deep learning, making processes of decision highly obscure. However, we can securely and openly keep the AI data and AI decisions in blockchain, which forms a register that is reviewable and auditable [37].

The integration is also backed by the agency theory which highlights the problem of the asymmetry of information between stakeholders. Both AI and blockchain can collaborate to reduce this gap by producing more accurate and transparent information and therefore accountability and trust are improved. argues Emmanuel Blockchain provides verified and distributed information, AI identifies anomaly, and automated smart contracts reduce manipulation and opportunistic actions [38].

Synergy between AI and blockchain can also develop new solutions to all kinds of problems like detecting and preventing fraud, authentication, risk management, and regulatory oversight. An example of this is AI-based fraud systems, which will analyze data on blockchain ledger transactions in real-time and identify suspicious behavior and anomalies. The combination of all these technologies leads to a profound power of ensuring financial security and transparency [39].

Smart contracts or self-executing, pre-defined contracts are essential to blockchain technology and a significant use of the combination of the two technologies. Since the terms change automatically, market information is analyzed in real-time, or they operate based on preset rules, smart contracts that use artificial intelligence are dynamic and can be changed in real-time, thus simplifying the process and reducing the necessity to react to it by the human factor. Therefore, financial transactions become more precise and effective [2].

In the field of reporting, blockchain and AI can be used to create instantaneous, precise reporting. The transactions are captured and processed on an end-to-end real-time basis and provide real-time financial reporting insights to its users and enhance predictive insights of performance [8].

Fraud detection AI systems can also be proactive. With AI algorithms running against the data about blockchain transactions, businesses can see transactions as they occur and be alerted as suspicious transactions take place, resulting in automatic corrective actions. An example is that, in case of a transaction being categorized as a potentially fraudulent transaction, the AI system may alert relevant parties, start an investigation, and temporarily freeze the transaction. This is a proactive strategy of preserving resources and building confidence since there is a low chance of occurrence of crimes that involve fraud [34].

4. The Applied Aspect

4.1 Description of the Research Methodology, Sample, and Testing Stability of the Scale

In this section, the study manners, population and sample, research tool, and the scaling reliability have been explained.

4.1.1 Study Methodology

Because of the collected data being descriptive in character, the study followed the descriptive-analytical methodology as it can be used to explore, measure, and relate various variables.

4.1.2 Study Population

The population of the study consisted of accounting graduates with professional competence as well as academic experts specializing in accounting.

4.1.3 Study Sample

The study sample included 140 participants, selected randomly. The following table presents the demographic distribution, see Table 1.

Table 1. Distribution of the Study Sample According to Demographics

Variables	Levels of the Variable	Frequency	Percentage
Current Position	Academic	56	40%
	Professional (non-academic)	84	60%
Educational Level	PhD	21	15%
	Master's	49	35%
	Bachelor's	70	50%
Years of Experience	Less than 5 years	28	20%
	5–10 years	42	30%
	11–15 years	28	20%
	More than 15 years	42	30%

- Current Position:** 40% of participants worked in academia, while 60% worked in professional roles outside universities.
- Educational Level:** 15% of the participants held PhDs, 35% held Master's degrees, and 50% held Bachelor's degrees.
- Experience:** 20% had less than 5 years of experience, 30% had 5–10 years, 20% had 11–15 years, and 30% had more than 15 years of experience.

4.1.4 Research Instrument

To answer the research questions and test the study hypotheses, the researchers employed questionnaire instruments developed by the authors. The first dimension focused on artificial intelligence, the second on blockchain, the third on transparency, and the fourth on information asymmetry. Each dimension consisted of a set of items measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree)

4.1.5 Stability Testing

Stability is the consistency of the questionnaire and there are no contradicting answers so that when the instrument is administered to the same sample under the same conditions it will give the same results. The researchers also assessed Stability with the help of **Cronbach's Alpha**, see Table 2.

Table 2. Stability Coefficients (Cronbach's Alpha)

Variables	Number of Items	Cronbach's Alpha
Dimension 1: Artificial Intelligence	17	0.958
Dimension 2: Blockchain	14	0.948
Dimension 3: Transparency	10	0.927
Dimension 4: Information Asymmetry	6	0.842
Total	47	0.985

The study axes show high values of the overall Stability coefficients as indicated in the table above. The overall Stability of the questionnaire which contained 47 items was (0.985). The first axis was (0.958), the second axis (0.948), the third axis (0.927) and the fourth axis (0.842). According to Nunnally's criterion, which considers (0.7) as the minimum acceptable threshold for reliability, the questionnaire enjoys a high level of Stability, making it suitable for use in the field application of the study [40].

4.2 Analysis of Results and Hypotheses Testing

This section presents and analyzes the statistical results obtained to test the study's hypotheses and to understand how the integration of artificial intelligence (AI) and blockchain influences transparency and information asymmetry.

Hypothesis 1

There is a significant relationship between the integration of AI and blockchain and transparency.

Hypothesis 2

There is a significant relationship between the integration of AI and blockchain and information asymmetry.

To test these hypotheses, correlation analysis was conducted between the independent variables (AI and blockchain) and the dependent variables (transparency and information asymmetry), see Table 3.

Table 3. Results of the Correlation Test between the Independent and Dependent Variables

Variables	Transparency	Information Asymmetry
Artificial Intelligence	0.552**	-0.580**
Blockchain	0.676**	-0.501**

** Significant at 0.01 level

* Significant at 0.05 level

It is evident from the above table that there is a statistically significant correlation at the 0.01 level between the independent variables (artificial intelligence and blockchain) and the dependent variables (transparency and information asymmetry). This indicates the presence of a strong positive correlation between the independent variables and the dependent variable, transparency, which suggests that the greater the integration between artificial intelligence and blockchain, the higher the level of transparency in financial data. The table also reveals a strong negative correlation between the independent variables and the dependent variable, information asymmetry, implying that the closer the integration between artificial intelligence and blockchain, the greater the reduction in information asymmetry.

Hypothesis 3

There is a significant impact of integrating AI and blockchain on transparency.

- **H3a:** AI has a significant impact on transparency.
- **H3b:** Blockchain has a significant impact on transparency.

The influence of the independent factors (blockchain and artificial intelligence) on the dependent variable (transparency) was investigated using multiple linear regression in order to evaluate this hypothesis, see Table 4.

Table 4. Multiple Regression Results (Impact on Transparency)

Variables	B	T	Sig.
Constant	0.010	0.147	0.883
Artificial Intelligence	0.835	3.801	0.000
Blockchain	0.749	8.548	0.000
F-statistic	109.880	probability value	0.000
R ²	0.457	Adjusted R ²	0.453
Durbin-Watson	1.856		

Based on the statistical analysis, the findings shown in the above table show that the model is significant since the F-statistic's value of (Sig.) was less than 0.05, or 0.000. This proves that the model can be tested and that its outcomes are trustworthy. Furthermore, 1.856 was the Durbin-Watson value, which is great because it is within the permissible range of 1.5 to 2.5. This shows that the time series values of the research model do not exhibit false regression or autocorrelation.

The explanatory power of the independent factors on the dependent variable is 46%, according to the R-squared value, which was 0.457. In addition to random errors resulting from sample accuracy, measurement precision, and other factors, the adjusted R-squared value was 0.453, meaning that the independent variables account for 45% of the variance in the dependent variable, with the remaining 55% coming from factors outside the model.

Interpretation of Sub-Hypothesis 1

The results of the statistical analysis show that the significance value (Sig.) of the independent variable artificial intelligence was below 0.05, in 0.000. This suggests that transparency is positively impacted by artificial intelligence in a statistically meaningful way.

Interpretation of Sub-Hypothesis 2

The results of the statistical analysis show that the significance value (Sig.) of the independent variable blockchain was less than 0.05, at (0.000). This indicates that blockchain has a statistically significant positive effect on transparency.

The following is a representation of the multiple linear regression equation:

$$Y = 0.010 + 0.835X_1 + 0.749X_2$$

Where:

Y = Transparency

X₁ = Artificial Intelligence

X₂ = Blockchain

Hypothesis 4

There is a significant impact of integrating AI and blockchain on information asymmetry.

From this main hypothesis, the following sub-hypotheses are derived:

- **H4a:** AI has a significant impact on information asymmetry.
- **H4b:** Blockchain has a significant impact on information asymmetry.

The influence of the independent factors (blockchain and artificial intelligence) on the dependent variable (information asymmetry) was investigated using multiple linear regression analysis in order to evaluate this hypothesis, see Table 5.

Table 5. Multiple Regression Results (Impact on Information Asymmetry)

Variables	B	T	Sig.
Constant	0.130	1.047	0.296
Artificial Intelligence	-0.566	-5.882	0.000
Blockchain	-0.943	-3.014	0.003
F-statistic	66.811	probability value	0.000
R ²	0.339	Adjusted R ²	0.334
Durbin-Watson		1.521	

Based on the statistical analysis, the findings shown in the above table validate the model's relevance since the F-statistic's (Sig.) value was less than 0.05, or 0.000. This shows that the model can be tested and that its outcomes are trustworthy. The Durbin-Watson value was also 1.521, which is great because it falls between 1.5 and 2.5, which is the acceptable range. This demonstrates that the research model's time series values do not exhibit autocorrelation or false regression.

The independent factors have a 34% explanatory power over the dependent variable, according to the R-squared value of 0.339. In addition to random errors resulting from sample testing accuracy, measurement precision, and other unrelated factors, the independent variables account for 33% of the variance in the dependent variable, with the remaining 67% being explained by factors outside the model, according to the adjusted R-squared of 0.334.

Interpretation of Sub-Hypothesis 1

The results of the statistical analysis show that the significance value (Sig.) of the independent variable artificial intelligence was less than 0.05, at (0.000). This indicates that artificial intelligence has a statistically significant negative effect on information asymmetry.

Interpretation of Sub-Hypothesis 2

Statistical analysis indicated the significance value (Sig.) of independent variable (blockchain) as less than 0.05, at (0.003). This imply that, the effect of blockchain is statistically negative on information asymmetry.

The following is a representation of the multiple linear regression equation:

$$Y = 0.130 + 0.566X_1 + 0.943X_2$$

Where:

Y = Information Asymmetry

X1 = Artificial Intelligence

X2 = Blockchain

The findings validate the theoretical assumptions and underline the significance of the use of artificial intelligence and the blockchains in accounting. The results indicated that the technologies play a remarkable positive role towards the areas of transparency since they would assist in the production of engaging reports as well as on-time processing of transactions. Simultaneously, they bring an adverse effect on the issue of information asymmetry since they can analyze and process big data in real time, identify hidden patterns, and make use of decentralized records that guarantee the integrity and security of financial information.

4. Conclusion

1. There is a significant positive impact of the integration of AI and blockchain on the level of transparency in providing financial information.
2. The integration of AI and blockchain limits third-party interference, reduces conflicts of interest, enhances stakeholder trust, and reduces information asymmetry.
3. The blockchain technology offers decentralized books, which guarantee integrity, transparency, and safety of financial information to aid in reports (financial and non-financial) in a timely fashion and be disclosed with accuracy and without delays.
4. The utilization of AI in business decreases the information asymmetry as the big data is analyzed, processed in real time, and discovering hidden patterns.
5. The combination of blockchain and AI has shown the development of new data processing opportunities that would not have been achieved with the help of each of these technologies separately. All of them can complement one another and help to obtain a more detailed image of financial information.
6. The findings of the research help the public to comprehend how the encircling and straightforwardness of the AI database with the help of blockchain technology enhance the trustworthiness and decipherability of judgments arrived at by the smart system and give pertinent data that can enhance the quality of the decisions made by the investors and other stakeholders.

Recommendations

1. Encouraging companies to adopt AI and blockchain together in accounting systems, given the benefits and gains this integration brings.
2. Regulatory frameworks (practices) must be put in place regarding utilizing AI and blockchain in accounting to control the mechanism of implementation, establish compliance, and offer sufficient data protection.
3. There is a necessity to sensitize accountants and auditors about the need to adopt AI and blockchain integration and to offer them specialized training courses to enable them to use the technologies.
4. Use AI models incorporating blockchain data to provide greater transparency to analyses, greater clarity to results and better trust offered to stakeholders.
5. Encourage Iraqi universities to incorporate contemporary technologies utilized in accounting, namely AI and blockchain, into the coursework of accounting departments in order to keep the latter in line with international trends.
6. Future research into regulatory and technical issues of the application of these technologies can also occur in the accounting and audit practice.

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