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## Using blockchain technology to achieve the operation objectives of internal control: A study of the opinions of a sample of academics, auditors, accountants, and computer specialists

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### Abstract

Blockchain technology has now become one of the essential financial technologies that cannot be dispensed with and has been used to address various topics, including health, real estate, etc, this study aimed to demonstrate the impact of blockchain technology in achieving the first objective of internal control, which is operational objectives, this research explores the importance of this technology and how it can affect internal control, this research follows the descriptive and analytical approach, A questionnaire was distributed to the research sample consisting of academics, auditors, accountants, and computer specialists, the sample amounted to 40 people, The questionnaire was published via Google Forms, and the SPSS program was used for statistical analysis, the results indicated that the use of blockchain technology will achieve the first objective, which is operational objectives.

**Keywords:** Blockchain, Internal Control, Operational Objectives.

## Introduction

In light of recent technological developments, including blockchain technology, which is currently being used to address financial and non-financial issues in industry, (Vanmathi, C., Farouk, A., Alhammad, S. M., Bhattacharya, S., & Kasyapa, M. S,2024) real estate, health, and many other fields, it has become highly influential, (Veuger, J, 2018) There are always efforts to activate internal control in government institutions to achieve their strategic objectives through an internal control system, (Abu Naser, S. S., Al Shobaki, M. J., & Ammar, T. M,2017). The internal control system is designed by management and overseen by the board of directors According to the COSO Committee, (Fourie, H., & Ackermann, C,2013) internal control objectives are divided into three main objectives (Janvrin, D. J., Payne, E. A., Byrnes, P., Schneider, G. P., & Curtis, M. B, 2012): operational objectives, reporting objectives, and compliance objectives, The study also examined government institutions, and operational objectives are divided into:

- Improving company performance, not just financial performance, but also high operational performance. (Bram, S. J., & Mohammed, R. B, 2023)
- Protecting assets, including controlling company assets, monitoring inventory, etc. (Cosmin, D. E,2011)
- Increasing the productivity of the organisation. (Fang, B., Zhang, Y., Song, Z., Ren, F., Xu, X., & Zhang, Y, 2022)
- Increasing the quality of products or services. (Ahmad, M. N, 2023)
- Promoting a spirit of innovation within the organization. (Hoai, T. T., Hung, B. Q., & Nguyen, N. P, 2022).
- Achieving customer satisfaction. (Al-Omari, Z., Alomari, K., & Aljawarneh, N, 2020).

- Executing operations with high efficiency. (Root, S. J, 2000)
- Executing operations effectively Effectiveness is the correct execution of work, For example, a purchasing committee makes purchases in the correct quantities, This is either true or effective, by adding the correct quantities and appropriate materials, In addition to being less expensive, it seeks to achieve the lowest cost and implement it in the shortest time, if a sound internal control system is in place, all production, purchasing, marketing, public relations, and maintenance processes will be highly efficient and effective, this is also excellent with a sound internal control system.
- Preserves the organization's assets. (Mahadeen, B., Al-Dmour, R. H., Obeidat, B. Y., & Tarhini, A, 2016).
- Reduces waste. (Cheng, Q., Goh, B. W., & Kim, J. B, 2018)
- Provides reasonable assurance regarding fraud prevention. (Rashid, C. A, 2022).
- Prevents wrong decisions. (Mahadeen, B., Al-Dmour, R. H., Obeidat, B. Y., & Tarhini, A, 2016).
- Prevents damage. (Dimitrijevic, D., Milovanovic, V., & Stancic, V, 2015).
- Reduces inefficiency. (Cheng, Q., Goh, B. W., & Kim, J. B, 2018)
- Here comes this study to demonstrate the impact of modern blockchain technologies on internal control.

## Research Problem

Despite recent technological developments, internal control systems in most government institutions still suffer from weaknesses, hence, the research problem:

Does blockchain technology impact the achievement of government institutions' operational objectives?

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## Importance of the Study

The importance of this study stems from the importance of modern technologies and their current role, as well as the significance of blockchain technology in all financial and non-financial sectors, It also highlights the importance of the internal control system, given its fundamental role in achieving the organization's strategic objectives and its contribution to enriching the scientific literature related to this technology.

## Research Objectives

This study aims to demonstrate the impact of modern technologies (blockchain technology) on achieving the operational objectives of the internal control system.

## Research Hypotheses

Based on the research problem, we hypothesize the following:

- Blockchain technology impacts the achievement of the operational goals of government institutions.

## Research Methodology

A descriptive approach was used, relying on primary and secondary sources, An analytical approach was used to analyze the sample's responses, A questionnaire was designed for this purpose and distributed to the research sample, consisting of academics, managers, auditors, and accountants working in government institutions, via Google Forms, All questionnaires were valid because mandatory responses were added to all questionnaire questions.

## Scope of the Study:

The study proposes the application of blockchain technology to achieve the operational objectives of internal control, the study included the opinions of a sample

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of academics, auditors, accountants, and computer specialists working in Iraqi government institutions.

### Research Sample:

The four-section questionnaire was distributed to the research sample of 40 academics, auditors, accountants, and computer specialists via Google Forms, which includes a mandatory reminder feature for respondents that all answers are required and cannot be skipped , Therefore, all questionnaires were valid.

### Data Collection:

Data was collected through a Google Form survey and distributed to participants, including academics, auditors, and accountants, It was clarified that responses would be treated with strict confidentiality and used for research purposes only, Survey Design: The survey was designed in several sections, including key areas: demographic information questions, blockchain technology questions, and operational goal dimensions, A five-point Likert scale was used to analyze the data, Descriptive statistics were used to analyze the data in the form of averages and percentages.

### Demographic Data:

After obtaining responses from the sample of 40 academics, accountants, auditors, and computer specialists, the researcher closed the responses, which were as follows:

Regarding the qualifications:

Table no. (1): qualifications

Degree	Number	Percentage
PhD	17	42.5%
Master's	13	32.5
Bachelor's	10	25%
Total	40	100%

Regarding the qualifications, the Google Form was designed only to accept responses from bachelor's, master's, and doctoral degrees, the responses revealed that 42.5% of the sample had a doctorate, the highest percentage, followed by 32.5%, the second highest percentage, with bachelor's degrees, the lowest percentage was for master's degrees, 25%.

Table no. (2): age

Age	Number	Percentage
Under 20 years old	0	0%
21-30	18	45%
31-40	16	40%
41 and over	6	15%
Total	40	100%

From the data in the table above, it is clear that the highest percentage was for those over forty years old, at 15%, 40% were between the ages of 31 and 40, 45% were between the ages of 21 and 30, and 0% were under the age of 20, The reason for this percentage being zero is that the program was closed to accept bachelor's degrees and above, the minimum age to obtain a bachelor's degree is 22 years, making the percentage under 20 zero.

Table no. (3): Specialization

Age	Number	Percentage
Accounting and Auditing	27	67.5%
Computer Science	13	32.5%
Total	40	100%

Regarding specialization, the questionnaire was designed to only accept responses from those with accounting, auditing, and computer science majors, the responses revealed that 67.5% were accounting and auditing majors, the highest percentage, followed by 32.5% with computer science majors (the accounting and auditing majors were combined because the doctoral and master's degrees in Iraq are in financial accounting), auditing or administrative and costing specializations, and a bachelor's degree is limited to accounting only, therefore, the specialization of

financial accounting and auditing was included to include bachelor's, master's, and doctoral degrees.

Table no. (4): Gender

Gender	Number	Percentage
Male	33	82.5%
Female	7	17.5%
Total	40	100%

Regarding gender, 82.5% of the responses were from women and 17.5% from men.

## Statistical Analysis of the Axis

### - First Axis:

The results of the analysis for the first axis (the blockchain technology application axis) showed that the average response of the participants was (4.06), indicating agreement on the content of the questions related to the axis, Conversely, the standard deviation was (1.02), indicating a moderate variation in opinions.

### - Second Axis:

The results of the analysis of the second axis (operational objectives when using blockchain technology) showed that the average response of participants was (4.07), indicating their agreement with the content of the questions related to the second axis, In contrast, the standard deviation was (1.2) indicating a moderate variance in opinions.

## Research Contribution

This research provides valuable insights into the use of blockchain technology in organizations to achieve operational objectives of internal control, by achieving asset preservation, efficiency and effectiveness, customer satisfaction, service quality, and preventing incorrect decisions.

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## Conclusions

Blockchain technology is a modern technology currently in use, and many organizations have benefited from it in a variety of areas, as previously mentioned by the researcher, Through this research, a set of conclusions were reached, including:

1. Blockchain technology provides immutable records that are distributed simultaneously to all parties.
2. Blockchain technology enhances the preservation of fixed assets.
3. Blockchain technology increases customer satisfaction.
4. Blockchain technology increases efficiency and effectiveness.
5. Blockchain technology contributes to reducing time waste.

## Recommendations

After reaching the above conclusions, the researchers recommend the following:

1. The necessity of adopting blockchain technology in government institutions, as it will contribute to reducing manipulation, as their records are not susceptible to distortion or tampering.
2. The necessity of applying blockchain technology in asset management, as it plays a significant role in preserving these assets.
3. The necessity of adopting blockchain technology to improve customer satisfaction by facilitating the provision of services through smart contracts.
4. The necessity of applying blockchain technology to improve efficiency and effectiveness in performing administrative and financial tasks and reducing the need for human intervention.

5. The necessity of applying blockchain technology to reduce wasted time by automating work.

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