A survey study of Iraqi auditors’ adoption of blockchain technology

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Abstract

Purpose – This paper seeks to investigate the factors influencing auditors’ behavioural intentions towards blockchain technology (BT) adoption in Iraqi government banks. It also highlights the relationships between these factors to determine if the proposed model can provide a more comprehensive means of comprehending how auditors in government banks have adopted BT.

Design/methodology/approach – The study uses the unified theory of acceptance and use of technology and expands it by incorporating five external constructs: “system trust”, “cost”, “transparency”, “security” and “auditor’s skill.” This study employed a quantitative and exploratory methodology through the gathering and examination of data from 300 auditors. For the evaluation of the measurement and structural models, the authors adopted the partial least squares structural equation modelling approach with SmartPLS v4.

Findings – The findings demonstrate that “auditor’s skill and four government features of BT adoption” are major factors in government bank auditors’ adoption of BT. Additionally, the findings indicate that social influence is a potent indicator of one’s intention to adopt BT in the banking industry.

Research limitations/implications – One limit of this study is the selection of governmental perspective. This study is limited to auditors’ opinions, who work at the government banks. Further studies may consider other perspectives in order to provide an in-depth analysis of blockchain.

Practical implications – This paper offers valuable insights into the factors influencing the adoption of blockchain technology in Iraqi governmental banks. It provides empirical evidence supporting auditing units and internal auditors in enhancing their job performance through the adoption of such technology.

Originality/value – This study contributes to the existing literature on technology adoption within the audit profession, specifically examining the use of blockchain technology. By exploring the features of technology adoption within government institutions in the auditing field, it introduces a new perspective, emphasizing the importance of auditor skills.

Keywords Auditing, Blockchain, Auditor skills, UTAUT, Government banks, Developing countries

1. Introduction

The auditing profession has encountered a gradual change and development in its features and processes as a result of the new emerging technologies and digital innovations over the past twenty years (Lombardi et al., 2021). These technologies and digital innovations include automation, social media, big data, artificial intelligence and cloud computing (Yahya et al., 2023). They have continuously renewed financial and accounting business models, thus demonstrating the need to change and develop core-auditing processes (Arnaboldi et al., 2017; Cleary and Quinn, 2016; Cockcroft and Russell, 2018; Davenport and Kokina, 2017; Vasanhereliy et al., 2017). One of the most contemporary technologies in a business environment is blockchain technology (BT). Since it started in 2008, BT has received wide attention from academicians and practitioners due to its importance and capabilities to boost the primary business operations of corporates (Bellucci et al., 2022).

According to Bonsón and Bednárová (2019, P. 726), BT is “a distributed digital ledger that is used to record and share information through a P2P network”. Bellucci et al. (2022, P. 122)
assert that BT is “a distributed digital ledger shared by several peers in a network that facilitates transaction recording and property tracking for tangible and intangible assets”. Encryption signatures provide the essential basis for organizing and verifying transactions by recording the details of transactions in serial blocks within a predetermined time range. In other words, BT is a technology for storing and verifying transaction records that works by adding blocks of data to a ledger, which is stored over a peer-to-peer network (Coyne and McMickle, 2017). It is characterized as a disruptive technology that significantly impacts the business models and market structures of many market sectors and professions, including accounting and auditing (Shin and Bianco, 2020).

BT makes fraud and scams nearly impossible since each new block is marked “in a chronological order” and “correlated to the previous block” (Ducas and Wilner, 2017). If an attempted fraudulent transaction is detected, it will not lead to the forgery of all previous blocks. Instead, the network would reject the fraudulent transaction, and any attempts to alter previous blocks would be immediately recognized as invalid by the network’s consensus protocol. BT’s security lies in the consensus mechanism, which ensures that the majority of the network participants agree on the validity of transactions and blocks (Pachamanova et al., 2017). Additionally, BT provides many unique and essential features, such as decentralized management, enhanced security (Sabu et al., 2021), consistency, traceability, transparency, data sharing (Miao et al., 2022), interoperability and high-speed transactions exchange (Lin et al., 2022). Moreover, BT is used in many crucial areas, such as accounting, auditing, reporting, insurance, decentralized finance, cryptocurrencies, cybersecurity, smart contracts and energy (Cong and He, 2019; Hughes et al., 2019; Rozario and Thomas, 2019; Spanò et al., 2022). The Economic Forum (2015) at Davos-Klosters, Switzerland, asserted that by the year 2025, nearly 10% of global GDP might be dependent on BT. It is supported by an increasing number of start-ups that use such technology with a total market value of almost 180 billion USD (Zalan, 2018).

BT capabilities highlight a crucial research question of how this technology can expand the auditing practice profession. Chapman et al. (2007) argue that the development of new technologies and digital information systems might fundamentally affect traditional accounting and auditing models, which requires considerable integration of other departments’ practices within the organizations. Since BT has the competence to influence the auditing process significantly, investigating the potential impact of this technology constitutes an essential task for academicians. Gietzmann and Grossetti (2021) point out to the existence of multiple opportunities for auditing academicians to comprehend the potential emerging technologies such as blockchain. In other words, we know that auditing and accounting academicians have made limited contributions examining such an area, and are not actively involved in leading multidisciplinary research teams such as auditing and information technology. In the same context, recent reports issued by the big four accounting firms (Deloitte, 2020; EY, 2020; KPMG, 2018; PwC, 2020) reveal that accountants, auditors and regulators of accounting and auditing standards will be significantly influenced by emerging innovations and technologies, especially BT. It is noteworthy that the potential BT impact will cover all transaction recording, processing, organizing, settling, reviewing and reporting within the firms (Bellucci et al., 2022). Overall, real-time auditing facilitated by BT is a huge opportunity for the auditing profession (Castka et al., 2020).

Despite the increasing literature and official reports on utilizing BT potential to enhance corporate businesses, understanding its implications and applications provides an epistemological chance and an emerging subject that awaits investigation in the field of auditing. It is of consequence for, in particular, developing countries which suffer a slow response to adopting contemporary technologies. Garanina et al. (2021) underscore BT is an innovative and emerging technology, and its literature highlighted the importance of conceiving its effect on multiple use cases within and between companies. Additionally, Tiron-Tudor et al. (2021) discuss the need to keep practitioners, regulators and academicians
updated on potential disruptive technological developments that could affect business ecosystems. Furthermore, business managers should consider the behavioural dimensions of information systems' end users and their decisions to implement emerging technologies such as BT (Farcane and Deliu, 2020). Consequently, it is crucial to address the existing knowledge and methodological gaps by developing a comprehensive hypothetical model to investigate auditors' behavioural intentions towards adopting BT in the auditing profession, specifically from a government bank’s perspective in a developing country such as Iraq.

2. Literature review and developing hypothesis

2.1 Blockchain technology

The efforts of academicians, professional societies and technology companies have been going on to reach one definitive version of BT. Most members of these societies and companies agree that BT is a distributed database which maintains an ever-growing list of data and transaction records enhanced and protected against manipulation, change and distortion that may be caused by transacting parties or even by operators of nodes (Fanning and Centers, 2016). Nakamoto (2008) introduces the concept of BT with the idea of approving the validity of work through a hash-based chain of parties participating in a sequential and temporal network independent of a third party. BT was initially developed as a fundamental solution to the double-spending issue, based on using a P2P distributed timestamp server to create an algorithmic proof of the peer-to-peer chronological order. As long as network nodes are collectively controlled within more than one CPU frame, any BT-based transaction system can be considered secure and consistent.

The first form of BT was Bitcoin, a decentralized cryptocurrency dependent on BT application. BT is a network infrastructure that provides confidence in the matching process by providing distributed validation, auditability and consensus mechanisms (Falwadiya and Dhingra, 2022). This technology is grounded on a P2P network. It uses an algorithm-based software module which negotiates the information content of the ordered and connected blocks of data together with encryption and security mechanisms to maintain its integrity (Jayasuriya and Sims, 2022). Moreover, it is based on a common system of transactions between the network parties and is decentralized; however, it is subjected to a mutual agreement among all parties in the network. In other words, BT is a distributed ledger, chronological, secure, encrypted, anonymous and unanimous (Pal et al., 2021). BT is classified into four main categories (Tiron-Tudor et al., 2021):

1. **Public permissionless blockchain**, which allows anyone to join, read, feed and execute transactions in the BT network, creating high transparency with the unanimous mechanism. Any person can take part in the unanimity mechanism. In simple words, any subscriber in the network can deal with others and see all transactions.

2. **Public permissioned blockchain**, which allows anyone to join and read transactions with restrictions on feeding and executing transactions. Only certain users are authorized to feed and execute transactions in the BT network.

3. **Private permissionless blockchain**, which can be used by previously specified nodes to validate transactions in BT network. Only authorized subscribers can join and read. There are restrictions on joining and reading transactions. The network owner can identify authorized subscribers who can write and implement transactions.

4. **Private permissioned blockchain**, which imposes restrictions on who can join and read network BT transactions. However, anyone can validate the transactions. The presence of restrictions on who can deal and see transaction records does not mean that everyone can participate in the unanimous mechanism.
Decentralized authorization, achieved through consensus mechanisms and cryptographic techniques, is a significant and valuable difference between traditional technologies and BT. In blockchain, data and transactions cannot be altered unless approved by the distributed network consensus, providing a robust and trustless approach to data integrity (Abad-Segura et al., 2021; Coyne and McMickle, 2017). BT is driving a huge revolution in the economy and other fields, and its implementation provides practical solutions to corporate main functional problems. Therefore, we are witnessing a significant change in how business is conducted in global economics and changes to professions and tasks.

2.2 Auditing and the blockchain technology

Being an emerging technology, BT is described as a platform based on information and communication technologies which affect various businesses and societies. These technologies also vary in terms of its multiple areas of use such as financial services, public administration, supply chain management and health care (Fullana and Ruiz, 2021). In the accounting profession, BT acts as a decentralized ledger that supplies accounting information in a transparent and secure manner (Fanning and Centers, 2016). The main advantage of BT is security. Once a transaction has been approved by the nodes in the network, that is, parties involved, it cannot be reversed or rearranged. The unchangeable transaction feature is essential to the integrity of BT operation, which ensures that all parties have accurate and identical records. Accordingly, this concept enhances trust. Because BT is a distributed database, all changes to the ledger are transparent to all network members. Hence, since trust and transparency are essential, the BT platform may help to enhance the competitive advantage of the company, as well as foster cooperation and coordination between it and other companies in the market (Garanina et al., 2021).

In BT, the transaction validation process is decentralized. The validation process requires all computers (nodes) in the network to agree to those transactions. Unlike the server architecture, BT does not suffer from failure in its work if a computer stops (Wang et al., 2022; Albarzani and Alsabawy, 2021). Nor can individual employees collude to bypass controls or unlawfully alter or delete official accounting records. Companies with BT platforms integrated into their accounting systems are able to significantly reduce fraud risks (Zheng et al., 2022). Thus, BT has many potentials for the development of the accounting profession, the most important of which are increased capabilities for automating transactions, reducing data loss, better tracking of transactions and more easily discovering users’ needs (Tiron-Tudor et al., 2021).

The auditing and accounting professions are complementary to achieving the stakeholders’ objectives. Here, BT supports the auditing profession by providing accurate, real-time disclosure of information that is gradually or sequentially automated. It also supports accounting information systems (AIS) by enhancing the work of the database such as the availability of multiple copies to BT network subscribers. Thus, this can decrease the occurrence of unintended errors and greatly curb fraud (Tan and Low, 2019). The integration of BT with AIS provides auditors with many advantages, the most important of which is increasing the auditability of accounting information, and detecting anomalies at the time of their occurrence by building an updated, unchangeable historical record of the company’s transactions. BT provides better tracking of audit traces in real time, rendering financial audits significantly simpler and cheaper (Dai and Vasarhelyi, 2017). These increased advantages will allow auditors to focus on more important tasks, especially in shifting focus to issues requiring the auditor’s judgement such as complex but rare processes; enhancing the effectiveness of internal control analysis and forecasting; and adopting and evaluating new IT systems (Yaroshchuk and Belova, 2020). Thus, due to the time saved for the auditors in terms of monitoring transactions, reconciling, comparing and disputing records from clients, financial audits will become more efficient and effective. On the other hand, there are
concerns about the negative effects of BT. These concerns include that BT will cause confusion in accounting and auditing services, and reduce the roles of accountants and auditors in dominating other jobs. In other words, it requires re-arrangement of the accounting and auditing profession in line with the achieved progress concerning the adoption of the BT platform. Today, the need to have a new generation of skilled accountants and auditors to respond to changes in the current accounting and auditing model has increased (Abdennadher et al., 2021, KPMG, 2018).

BT practices in the auditing profession are still in the stage of awareness or conviction. That is due to the changing and evolving role of this technology in the business markets and societies (Lombardi et al., 2021). A significant change brought by BT in the auditing profession is saving time and anti-fraudulent by activating cybersecurity and ensuring the privacy and protection of information (Vincent and Wilkins, 2020). BT enables the auditing profession to improve the cybersecurity-based accounting model. The cybersecurity, in turn, ensures the examination of data reliability, data security and transparency of transactions by emphasizing confidentiality, integrity, validity or verification (Demirkan et al., 2020). The BT needs to develop new regulatory standards and guidelines in regard to financial statement integrity issues, financial reporting risks, implications for internal and external auditors, corporate governance practices, understanding how to track audit trails and more (Castonguay and Smith, 2019; Yermack, 2017). In future, these standards and guidelines will assist auditors in managing the risks of BT usage by activating audit units based on BT platforms to save both time and money, turning these platforms more efficient and effective (Bonyuet, 2020). Additionally, BT will help auditors minimize many phenomena such as agency costs, information inconsistency and economic uncertainty (Tiberius and Hirth, 2019). In the same context, BT enhances auditing practices by maximizing transparency, auditability, trust and reliability in all transactions. It also reduces costs, human error and fraud with immutable ledgers, improves data quality and ensures privacy and transparency of the company’s procedures, and the possibility of real-time auditing (Bonsón and Bednárová, 2019; Smith and Castonguay, 2020).

BT is based on the concept of distributed consensual accounting records (DCAR), which adds new dimensions to auditing, continuous auditing and reporting. These records are approved by the subscribers (nodes) in the block such as supplier, customer, auditor, regulator and general management. The records are timely inserted, and cryptographically sealed, ensuring proof of data entry in them (Bonsón and Bednárová, 2019; Pachamanova et al., 2017). By using continuous BT-based auditing processes, this technology improves the efficiency of recording, reconciling and auditing accounting data. Meanwhile, BT allows audit practitioners to reduce costs and save time in carrying out these tasks and avoid human errors (Schmitz and Leoni, 2019). Therefore, audit units and auditors should acquire more skills and knowledge to meet the requirements of their clients as a result of BT employment. The acquisition of the new skills and knowledge will make audit units less labour-intensive and less time-consuming. As a result, the audit units will create a generation of experts capable of regulating, implementing and monitoring BT-based smart contracts, keeping immutable records, setting relevant standards and applying auditing rules. Tan and Low (2019) confirm that digital innovations constantly impact the auditing profession, and vice versa. It is obvious since accounting transactions recorded in BT are not correct and accurate automatically, but are subject to verification and consensual and compatible mechanisms. In this case, it is still possible for anomalies to arise, and therefore errors or fraud to appear. Nevertheless, generally speaking, it can be said that the error rate in BT will shrink rapidly, and the detection and tracking efficiency will rise in the auditing profession. The low cost of auditing will be due to the fact that auditing will be conducted to discover an unlikely instance of error instead of accepting the possibility of an error occurrence (Gomaa et al., 2019). BT has provided the auditing profession with an opportunity for greater integration of its practices with various information systems. For example, Wang and Kogan (2018) discuss the
necessity of integrating transaction processing systems with BT in companies. Such systems will allow auditors to obtain a complete copy of the client’s transaction data, continuously monitor the client’s global assets and carry out analytical procedures for the client’s transactions with greater accuracy, ease and in real time.

Alles and Gray (2020) believe that there is a continuous increase in demand for BT platforms, and the need to integrate them with AIS in the context of the companies’ internal business environment. It indicates an increasing demand for internal audit services. In order to activate these services accurately, those in charge of introducing BT should pay attention to developing its architecture, especially activating the communication networks that bring together internal auditors with the subscribing parties by enabling them to provide audit and assurance services. Thus, BT networked access makes it possible to have “continuous auditing procedures” without adding integrations to the company ledger software. BT enhances the auditing profession in various aspects of its operations. It improves data collection, ensuring accuracy, reliability and completeness of information. Additionally, BT facilitates secure recording and sharing of data, providing transparency and traceability throughout the auditing process. By leveraging BT’s tamper-resistant nature, auditors can establish an unchangeable audit trail, ensuring the accuracy and reliability of recorded data. These advantages have been recognized by researchers (Bellucci et al., 2022; Castka et al., 2020), making blockchain a promising tool for the auditing profession.

2.3 Conceptual model and developing hypotheses
For adopting any emerging technology in varied sections, researchers at the area of information and communication technologies (ICTs) recommend understanding well-known theories of technology acceptance to develop a conceptual model related to BT. The factors that affect the user’s intentions to adopt such a technology should be determined to build any technology acceptance model. Many theories cover technology acceptance concepts such as the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), technology acceptance model (TAM) (Davis, 1989), theory of planned behaviour (TPB) (Ajzen, 1991), task-technology fit (TTF) (Goodhue and Thompson, 1995) and unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003, 2012). Most of these theories have been adjusted, adapted and developed according to subsequent studies taking into consideration many conclusive factors such as characteristics of emerging technology, the personal, organizational, social as well as economic impacts and the type of productive or serviced sector. This study adopts the conceptual model of Falwadiya and Dhingra (2022) that examines the BT adoption factors by governmental entities. More than 72 factors that have a potential impact on the BT adoption were gathered and analysed. These factors were then reduced to eight major ones, according to UTAUT. This model was adopted due to its comprehensive, adjustable, adaptable and highly accurate results (see Figure 1).

The UTAUT is a well-established theoretical framework that seeks to understand and predict users’ intentions and behaviours towards adopting and using technology in future. It has been widely applied in various contexts, including auditing and accounting, to investigate technology adoption and its impact on professionals’ practices. In the auditing and accounting contexts, UTAUT is relevant because it helps researchers and practitioners understand the factors that influence auditors’ intentions to adopt new technologies, such as blockchain, and how these intentions translate into actual technology usage. The UTAUT aligns with the objectives of the current study by providing a robust theoretical framework to assess auditors’ behavioural intentions towards adopting BT in the auditing profession within Iraqi government banks. By employing UTAUT, the study can identify the key factors that influence auditors’ intentions to adopt BT, helping to understand the drivers and barriers for technology adoption in this specific context. Additionally, UTAUT enables the study to
investigate how these behavioural intentions translate into actual technology usage, shedding light on the potential effectiveness of BT adoption in the auditing practices of Iraqi government banks.

2.3.1 Performance expectancy (PE). PE refers to the degree to which an individual believes that using the BT system will help them to attain gains in job performance. Venkatesh et al. (2003) discuss that PE includes five elements: extrinsic motivation, outcome expectation, perceived usefulness, relative advantage and job fit. According to Pieters et al. (2021), the behavioural intentions of individuals’ future behaviours will directly be affected by their expectation of improved job performance when using technology. Thus, we believe that auditors’ performance in organizations will improve with BT. Additionally, the potential for a user to adopt a new technology depends on the individual expectation of its ability to increase job performance. In the auditing context, it is believed that auditors’ job performance in public sectors would improve efficiently and effectively if BT were adopted. Reducing the time of following audit trails to discover errors, as well as frauds, executing real-time auditing processes, doing more analyses of accounting systems and making predictions are some of the advantages of BT adopting in the auditing context.

In the auditing context, the adoption of BT is believed to offer numerous advantages that can enhance auditors’ job performance within public sectors. Some of these advantages include:

1. Efficient audit trails: BT can significantly reduce the time required to follow audit trails, enabling auditors to discover errors and potential frauds more efficiently.
2. Real-time auditing: BT allows for real-time auditing processes, providing auditors with up-to-date and accurate information for their assessments.
3. Enhanced data analysis: With BT, auditors can perform more in-depth analyses of accounting systems, leading to more comprehensive and insightful audit outcomes.
4. Predictive capabilities: BT enables auditors to leverage predictive analytics, contributing to more proactive risk management and strategic decision-making.
Empirical studies such as Abu Afifa et al. (2022), Alazab et al. (2020), Ferri et al. (2020), Handoko and Lantu (2021) and Kumari and Devi (2022) assert a positive relationship between PE and behavioural intention to use BT. Therefore, based on the existing literature and the perceived advantages of BT adoption in the auditing context within government sectors, we hypothesize that PE positively influences auditors’ intention to adopt BT in their professional practices. Hence, we could hypothesize that:

**H1.** Performance expectancy has a positive effect on auditors’ intention to use BT.

### 2.3.2 Efforts expectancy (EE)

EE refers to the perceived ease associated with the use of a system. In the context of auditors adopting BT, EE relates to auditors’ beliefs that BT, as an ICT-based platform, offers various features that make auditing tasks easier and less complicated. These features may include automatic transaction and data processing, encryption seals, time seals and continuous data backup, which collectively reduce the manual workload of auditors and streamline the process of dealing with auditing samples and evidence. Several studies, including Queiroz et al. (2020), have highlighted that if auditors find dealing with information systems easy, there is a high potential for adopting BT. Building on the research of Venkatesh et al. (2003), EE in this context is associated with factors such as ease of use and reduced complexity of technology. In other words, auditors are more likely to adopt BT if they perceive it as user-friendly and straightforward to use. Supporting the positive correlation between EE and BT adoption, studies by Abu Afifa et al. (2022), Ferri et al. (2020), Handoko and Lantu (2021) and Ullah et al. (2021) have confirmed the importance of effort expectancy in driving auditors’ intentions to adopt BT. Based on this background and evidence, we hypothesize that effort expectancy (EE) positively influences auditors’ intention to adopt BT. Therefore, it could be hypothesized that:

**H2.** Effort expectancy has a positive effect on auditors’ intention to use BT.

### 2.3.3 Social influence (SI)

SI refers to the extent to which individuals are influenced by the beliefs and opinions of others in their social environment to adopt a particular system or technology (Venkatesh et al., 2012). In the context of auditing, modern organizations actively promote awareness of emerging technologies like BT and their potential to enhance performance. In the auditing context, the perceptions and attitudes of managers, colleagues and users regarding BT play a crucial role in shaping auditors’ intentions to embrace this technology. If auditors perceive a positive reception of BT within their social environment, they are more likely to develop a favourable intention to use BT. SI is considered a direct factor influencing behavioural intention, encompassing various dimensions such as perceived image, social factors and subjective norms (Venkatesh et al., 2003). Auditors’ intention to use BT is likely to be influenced by how they perceive BT’s image, the opinions of their peers and the prevailing subjective norms within their auditing community. Previous empirical studies, including those by Abu Afifa et al. (2022), Ferri et al. (2020), Handoko and Lantu (2021) and Tran and Nguyen (2021), have consistently shown a positive association between SI and users’ intention to use BT. These findings support the notion that social factors play a significant role in shaping technology adoption intentions. Based on these arguments and the existing empirical evidence, we propose the following hypothesis:

**H3.** Social influence has a positive effect on auditors’ intention to use BT.

### 2.3.4 Facilitating conditions (FC)

FC positively influence auditors’ intention to adopt and use BT. FC refers to the degree to which auditors believe that their organization provides the necessary organizational and technical infrastructure to support the seamless integration and utilization of BT (Wong et al., 2020). This construct encompasses perceived behaviour control, enabling conditions and compatibility with existing auditing techniques (Venkatesh
et al., 2003). Auditors engaged in auditing activities necessitate access to secured and high-speed computers and networks to effectively utilize BT. A well-established technical infrastructure, coupled with a supportive organizational environment, is expected to enhance auditors’ motivation to adopt BT. When auditors perceive that their workplace offers the necessary facilitating conditions for BT implementation, they are more likely to demonstrate a positive intention towards adopting and utilizing this technology in their auditing practices. Moreover, auditors prefer BT to be compatible and interoperable with their organization’s current auditing techniques. The seamless integration of BT with existing systems and processes enhances its adoption feasibility and aligns with corporate infrastructure development goals. Researchers such as Abu Afifa et al. (2022), Ferri et al. (2020), Handoko and Lantu (2021) and Khazaei (2020) have found evidence supporting the positive impact of facilitating conditions on users’ intentions to adopt and use BT. Based on the existing literature and the logical connections between facilitating conditions and auditors’ intention to use BT, we hypothesize that auditors’ perceived facilitating conditions will have a positive effect on their intention to adopt and utilize BT in their auditing practices. Hence, it can be hypothesized that:

**H4.** Facilitating conditions have a positive effect on auditors’ intention to use BT.

2.3.5 **System trust (ST).** ST plays a crucial role in shaping auditors’ perceptions and intentions towards adopting emerging technologies like BT. Trust is defined as the positive expectations a person has about an entity or system and the reliance placed on its qualities, features or characteristics during commercial transactions (Small and Dickie, 1999). In the context of BT adoption, ST represents auditors’ confidence in accepting this technology to improve their performance (Falwadiya and Dhingra, 2022). Auditors often approach their work with a principle of professional scepticism, implying that trust in the auditing profession is inherently uncertain. However, BT’s distinctive features, such as its decentralized, cryptographic and timestamped system, challenge the traditional notion of uncertainty. Tiron-Tudor et al. (2021) argue that BT operates on a consensus or compatibility mechanism that governs the storage of transactions and data in a distributed database. This feature fosters mutual trust among the network nodes (subscribers) responsible for approving and validating transactions and data. The robustness of BT in reducing errors and fraud instills greater confidence and trust among auditors, encouraging their acceptance of this technology (Spanò et al., 2022). Accordingly, the following hypothesis can be formulated:

**H5.** System trust has a positive effect on auditors’ intention to use BT.

2.3.6 **Cost (C).** The cost factor plays a pivotal role in technology adoption decisions, including the adoption of BT in the auditing profession. According to Venkatesh et al. (2012), the perceived benefits of a technology must outweigh its cost for adoption to occur. When considering the cost of adopting BT, it can be viewed from two perspectives: as an initial investment cost and as a decreasing variable cost over time.

(1) Initial investment cost: It is acknowledged that the implementation of BT can be relatively expensive as an initial investment. However, studies such as Rozario and Thomas (2019), Schmitz and Leoni (2019) and Tiberius and Hirth (2019) provide evidence of the positive effects of adopting BT in companies. Specifically, adopting BT leads to reduced costs in various aspects:

- Audit process efficiency: BT enables the tracking of audit trails in a defined, known and fully automated manner. As a result, the time required for the audit process is decreased, leading to increased efficiency and cost savings.
Data and transaction security: The use of distributed, timestamped and cryptographic databases in BT ensures a higher level of data and transaction security. This, in turn, lowers the costs associated with data loss or corruption, which can be significant for auditors and companies.

Decreasing variable cost: One significant advantage of BT is that it operates on a decentralized network and does not rely on a third party for operation. As a consequence, there are reduced indirect operation and maintenance costs for corporations, as there is no need to maintain a centralized infrastructure.

The evidence from previous studies suggests that despite the initial investment cost, the long-term cost-saving benefits and increased efficiency associated with BT adoption make it an attractive technology for auditors and accounting professionals. Accordingly, the following hypothesis can be formulated:

\[ H6. \text{ Cost has an effect on auditors' intention to use BT.} \]

2.3.7 Transparency (T). The literature suggests that transparency is a distinguishing characteristic of accounting information systems (AIS) and a crucial aspect for auditors in preparing audit reports (Castka et al., 2020). In the context of BT adoption, characteristics like transaction auditability, verifiability, data availability and information accuracy contribute to enhancing transparency in the audit profession. These dimensions of transparency are critical factors influencing auditors' acceptance of any technology, including BT (Bellucci et al., 2022; Bonsón and Bednárová, 2019; Tan and Low, 2019). Public blockchain technology, specifically, enables transparency in the auditing profession by allowing auditors to access and audit all ledger transactions through a network of BT nodes (Clohessy et al., 2019; Kamble et al., 2020). In a BT network, identical data are distributed to each node in real time, ensuring transparency and auditability. Considering the evidence from the literature and the features of BT that contribute to transparency, it can be hypothesized that transparency has a positive effect on auditors' intention to use BT in their auditing practices. Accordingly, the following hypothesis can be formulated:

\[ H7. \text{ Transparency has a positive effect on auditors' intention to use BT.} \]

2.3.8 Security (S). Security is a fundamental aspect in the adoption of any technology, and in the context of BT, it holds paramount importance. In this hypothesis, we aim to investigate the impact of security on auditors' intention to use BT in the auditing profession. Security in the context of BT refers to the measures taken to safeguard data and transactions from unauthorized access, tampering or manipulation. It encompasses the personal assurance customers have that their data will remain confidential, both during transmission on the network and while existing in the databases. In the context of BT, security is ensured through highly secure encryption mechanisms, which prevent hackers or unauthorized individuals from gaining access to the network or database and making unauthorized changes to the data. Several studies support the critical role of security in the adoption of BT. Falwadiya and Dhingra (2022) and Garanina et al. (2021) highlight that customer trust in the security of their data is a vital factor in technology adoption. Mohanta et al. (2022) emphasize that encryption ensures the accuracy and reliability of the data, giving auditors confidence in the integrity of the information they are auditing. Furthermore, BT provides inherent advantages for the auditing profession concerning security. Transactions in the blockchain are asymmetrically cryptographic, meaning they are encrypted and can only be accessed by authorized parties with the appropriate private keys. Moreover, transactions are sealed with a timestamp, providing an immutable audit trail that enhances the traceability and transparency of financial records. Tiron-Tudor et al. (2021) highlight the additional benefits of private BT,
which further enhances network management and user security by excluding third-party intermediaries. The enhanced security provided by BT is particularly advantageous in the auditing context, where auditors rely on accurate and tamper-proof financial data. Abad-Segura et al. (2021) emphasize that BT creates a database of transactions that is immune to manipulation and distortion, ensuring the security and accuracy of accounting information. Considering the insights from these studies, we hypothesize that security positively influences auditors' intention to use BT in their professional practices. The heightened security measures offered by BT, including encryption, immutability and transparency of transactions, instill confidence in auditors that the financial data they audit are reliable, tamper-proof and securely maintained. As auditors seek to uphold their professional integrity and ensure the accuracy of financial information, they are likely to be positively inclined towards adopting BT as a technology that provides robust security features. Accordingly, the following hypothesis can be formulated:

H8. Security has a positive effect on auditors' intention to use BT.

2.3.9 Auditor’s skill (AS). “Skill” refers to both the general and technological skills of users. Each skill embraces experience, knowledge and passion towards accepting emerging BT (Glomann et al., 2020; Jang and Han, 2022). Auditors with strong general and technological skills are better equipped to understand the features of BT, such as trust, reliability and data integrity. These skills enable them to assess the benefits and risks associated with BT adoption more effectively. As auditors’ skill levels increase, their trust in the technology is likely to be reinforced, leading to a stronger intention to use BT in their audit processes. Auditors’ skill and expertise in using emerging technologies play a significant role in assessing the cost implications of adopting BT (Castka et al., 2020). As auditors become more skilled in implementing technological solutions and understanding their cost efficiencies, they can better evaluate the cost-effectiveness of BT adoption in their audit practices. Thus, auditors’ skill is expected to mediate the relationship between perceived costs and their intention to use BT. The successful adoption of BT in auditing processes requires auditors to have a sound understanding of transparency mechanisms and distributed databases. With higher levels of skill, auditors can comprehend the transparency features inherent in BT and its potential impact on enhancing audit transparency. As auditors’ skill levels increase, their perception of the benefits of BT in achieving greater audit transparency is likely to strengthen, positively influencing their intention to use BT. Blockchain technology is known for its security features, such as cryptographic encryption and immutability, which can enhance data security in auditing processes. Auditors with advanced technological skills are better equipped to comprehend these security mechanisms and assess their potential impact on audit data integrity. As auditors’ skill levels increase, their confidence in the security aspects of BT adoption is expected to strengthen, influencing their intention to use BT in their audits. Auditor’s skill, encompassing both general and technological expertise, is a fundamental driver of their intention to adopt BT. According to Kend and Nguyen (2020), well-skilled auditors possess a deeper awareness of the potential benefits and challenges associated with BT adoption. Their proficiency in understanding emerging accounting technologies and their application in audit work reinforce their intention to use BT in the future. Therefore, higher levels of auditor’s skill are expected to positively influence their intention to adopt BT in their auditing practices. Accordingly, the following hypotheses can be formulated:

H9. Auditor’s skill will mediate the relationship of trust to intention to use BT.

H10. Auditor’s skill will mediate the relationship of cost to intention to use BT.

H11. Auditor’s skill will mediate the relationship of transparency to intention to use BT.
H12. Auditor’s skill will mediate the relationship of security to intention to use BT.

H13. Auditor’s skill has a positive effect on auditors’ intention to use BT.

2.3.10 Behavioural intention (BI). BI refers to showing attitudes, positively or negatively, towards the actual use of technology (Abu Afifa et al., 2022). Davis (1989) defines behavioural intention as the degree to which a person devises mature plans to perform or stop certain behaviours in the future. According to Davis (1989), Venkatesh et al. (2003) and Venkatesh et al. (2012), the intention of users explains their desire to actually own and use technology in the future, as the behavioural intention explicates how users plan and interact with the work environment to be in line with it. This leads to actual use. Handoko and Lantu (2021) discuss that the behavioural intention of auditors to accept BT will constitute the basis later for activating this technology and its actual use in the future.

In this paper, the UTAUT model has been adapted to suit the specific requirements of the current study, which aims to investigate auditors’ behavioural intentions towards adopting BT in the auditing profession within Iraqi government banks. The adaptation involves the removal of the “evaluation of use” construct from the original UTAUT model and its integration with the “intention of use” construct. In the standard UTAUT model, “evaluation of use” is a separate construct that assesses users’ evaluations of their initial experiences with the technology after its adoption. However, in the adapted model used in this study, “evaluation of use” has been merged with “intention of use.”

The adaptation was made based on the study’s requirements and the research main objective being investigated. In the context of the auditing profession and the specific focus on auditors’ behavioural intentions towards adopting BT, the distinction between “evaluation of use” and “intention of use” becomes less relevant. For auditors, the decision to adopt a new technology like blockchain is often driven by their perceptions of its potential benefits and its alignment with their professional needs. The traditional UTAUT construct of “evaluation of use”, which looks at post-adoption evaluations of user experiences, may not be as critical for the current study since the research focuses primarily on auditors’ initial intentions to adopt BT.

3. Methodology
3.1 Study design and data collection
This survey aims to investigate the factors influencing auditors’ behavioural intentions towards adopting BT in the auditing profession, with a specific focus on the development of the auditing profession in Iraqi government banks. The study included one primary endogenous construct, which is the adoption of BT to boost the auditing profession. The proposed conceptual model of study (see Figure 1) consists of ten constructs, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), system trust (ST), cost (C), transparency (T), security (S), auditor’s skill (AS) and behavioural intention (BI). In the same context, thirteen paths linking these different constructs were proposed, including four paths linking PE, EE, SI and FC with BI for auditors to accept BT; four other paths linking ST, C, T and S with BI for auditors to accept BT; and, finally, five additional paths in which the AE promotes the relationship between ST, C, T, S and BI. After designing one cross-sectional survey, this study was conducted in Iraqi government banks. Departments in government institutions have sought to employ emerging technologies, including BT, to greatly boost their business in recent years (Handoko and Lantu, 2021; Taha et al., 2021). The respondents in this study were the directors of audit departments and divisions working in the centre and branches of the seven government banks operating in Iraq, namely Alrafidain Bank, Alrasheed Bank, Industrial Bank, Agricultural Cooperative Bank, Real Estate Bank, Trade Bank and Alnahrain Bank.
The study population of 358 auditors was contacted, and after several processes of communication and motivation via e-mail, the respondents were promised to receive an executive summary report of the results of this research as an incentive to complete the survey. A total of 300 final responses were obtained, with an estimated response rate of 83.80%, which is acceptable. Data were collected through an electronic questionnaire based on self-assessed ratings via Google online forms. The data collection process for this study lasted from September 2022 to October 2022. To address the potential impact of data collection duration on the study’s findings, we conducted an analysis comparing the early responses received in September with the later responses collected in October. The comparison was performed using the paired samples t-test in SPSS. We aimed to identify any significant differences in responses between these two time periods. However, the results of the analysis revealed no statistically significant differences between the early and late responses. It was attached to the dispatched emails. Table 1 shows the demographic characteristics of the respondents.

Iraqi governmental banks play a critical role in the country’s financial ecosystem, acting as key stakeholders in managing public funds and resources. As such, they are subject to strict regulations and heightened scrutiny to ensure financial transparency, integrity and accountability. Studying auditors in this setting is significant because their work directly impacts the trust and credibility of the financial sector and government institutions. Auditors in governmental banks have a vital responsibility to verify the accuracy and reliability of financial information, detect fraudulent activities, and ensure compliance with relevant regulations. Their role is paramount in promoting public trust and ensuring that public funds are used responsibly and efficiently. Exploring their intentions towards adopting BT can shed light on how this emerging technology can enhance their capabilities in fulfilling these responsibilities.

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<th>Details</th>
<th>#</th>
<th>%</th>
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</thead>
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$N = 300$

**Source(s):** Table created by authors

Table 1. Respondents’ demographics
3.2 The study variables and questionnaire
The study is based on self-administered questionnaire consisting of two parts. Part A elicits demographic information such as gender, education, job experience, auditing training courses and daily use of ICTs. Moreover, Part B presents the items of study (constructs) variables. The items of the measurement model were derived from the ten main constructs as shown in previous studies, such as Abu Afifa et al. (2022), Alazab et al. (2020), Bellucci et al. (2022), Clohessy et al. (2019), Falwadiya and Dhingra (2022), Ferri et al. (2020), Glomann et al. (2020), Handoko and Lantu (2021), Jang and Han (2022), Kend and Nguyen (2020), Pieters et al. (2021), Queiroz et al. (2020), Vejačka and Stofa (2017), Venkatesh et al. (2003, 2012) and Venkatesh and Zhang (2014). The number of questionnaire items reached 37 indicators classified into nine constructs (see Appendix). The AS construct included three items measured by years of experience, specialized audit training courses and daily hours of use of various ICTs. The constructs items in the measurement model of study have been adapted and revised to suit and be consistent and purposeful. All questionnaire items were evaluated using a 5-point Likert scale (ranging from “strongly agree” (5) to “strongly disagree” (1)) to measure the degree of agreement with the statements. Prior to data collection, selected academics with knowledge and experience in accounting and auditing were consulted for pre-screening. The questionnaire was modified according to the academics’ feedback to improve its clarity. Then, an experimental study was performed before the comprehensive survey. Thirty-five auditors with good experience work in auditing technology were asked to participate with a view to obtaining sufficient accuracy.

3.3 Data analysis
The study used a two-step structural equation modelling (SEM) to test the proposed conceptual model. First, the measurement model was tested using the confirmatory factor analysis to verify the consistency and validity requirements, specifically the content, convergent and discriminant validities. In the second step, SEM analysis was used to test the validity of the thirteen paths (hypotheses) of the study’s structural model via SmartPLS v.4, depending on the significance level. The strength of the measurement and structural models of this study was evaluated by means of R square and Q square test.

4. Results
4.1 Confirmative factor analysis
Table 2 shows the results of testing the validity of the measurement model. The composite reliability (CR) values for ten constructs were higher than the cut off threshold of 0.70, while the average variance extracted (AVE) values were higher than the cut off threshold of 0.50. It confirms that they are compatible with the alignment in the context of convergent validity. Moreover, Cronbach’s alpha values were higher than 0.75 and less than 0.95, which confirms the reliability of the internal consistency of the measurement model items. In addition, all standardized factor loadings were above the cutoff threshold of 0.70 at a significance level of 99%. This also confirms the requirements of content validity and convergent validity. Table 2 also illustrates the mean and standard deviation values for each study item.

Table 3 demonstrates the values of the inter-correlations and the square root of the AVE in the diagonal of table. According to the Fornell-Larcker criterion, all the square root values of AVE were higher than the inter-correlations values of the study constructs, which fulfils the requirements of discriminant validity (Fornell and Larcker, 1981). The highest correlation between the study constructs was 0.830, which is less than the recommended cutoff threshold 0.850 according to Kline (2005). This asserts the absence of multicollinearity between the main variables (Taha et al., 2021). It also indicates a good discriminant validity of the
constructs of the measurement model. The common method bias was validated according to the recommendations in previous research of MacKenzie and Podsakoff (2012). Utilizing the full collinearity approach (Kock, 2015), this study examined the model for common method bias. We discovered that the highest internal VIF was 2.658, which was within the recommended limit of 5. Consequently, this study’s measurement model can be considered valid (Hair et al., 2016). Overall, all the results reveal that the measurements of the study variables are very homogeneous and possess the reliability and validity that enable the conduction of more statistical analyses on the obtained data.

<table>
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<tr>
<th>Constructs</th>
<th>Items</th>
<th>Mean</th>
<th>Standard deviation</th>
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<th>AVE</th>
<th>Cronbach’s alpha</th>
<th>CR</th>
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</table>

**Note(s):** All standardized factor loadings are significant at 99% confidence level; AVE = average variance extracted; CR = composite reliability

**Source(s):** Table created by authors
To check the fit of structural model for this study, the coefficient of determinations ($R^2$), the predictive relevance ($Q^2$) and the magnitude and significance of path coefficients were evaluated. Table 4 displays that the value of ($R^2$) for BI and AS in the study’s structural model exceeded the cutoff threshold value of 0.26 as suggested by Cohen (2016). Thus, this indicates the reliable predictive power of the proposed conceptual model. This result is also supported by the $Q^2$ value of BI and AS of predictive significance close to 1, indicating that the structural model has excellent predictive relevance. Using SmartPLS v4, a bootstrap procedure with 5,000 resamplings was executed (Hair et al., 2016), to test the hypotheses in the study model (see Table 4). Support for all hypotheses in the study’s structural model was found. The results in Table 4 illustrate that the largest effects on the behavioural intention of auditors to use BT are due to AS = 0.502, S = 0.265, C = 0.222, and T = 0.201, respectively (see Figure 2).

### 5. Discussion and implications

#### 5.1 Discussion

This section first summarizes results, and then discusses the findings in relation to previous research and studies, before considering theoretical and practical implications.

**Table 3. Results of the discriminant validity test**

<table>
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<th>EE</th>
<th>SI</th>
<th>FC</th>
<th>ST</th>
<th>C</th>
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**Note(s):** The diagonal represents the square root of average variance extracted. All inter-construct correlations are significant at 99% confidence level.

**Source(s):** Table created by authors.

**Table 4. Results of the structural model**

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<th>Hypothesis and relation</th>
<th>Path coefficients</th>
<th>t-value (bootstrap)</th>
<th>Support?</th>
<th>$R^2$ and $Q^2$</th>
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<td>$PE \rightarrow BI$</td>
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<td>0.502*</td>
<td>20.199</td>
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</tr>
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**Note(s):** *p < 0.05; **p < 0.01; ***p < 0.001

**Source(s):** Table created by authors.
The present study investigated the fundamental factors influencing auditors’ behavioural intentions towards the adoption of BT in Iraqi government banks. A developed model based on the framework of Falwadiya and Dhingra (2022) was tested using data from 300 participants in the survey. Eleven hypotheses were significantly supported at 99% confidence level and two at 95% confidence level. Hypotheses 1 to 4 relate to the relationships of PE, EE, SI and FC with BI, which were intended to reinforce most of the previous studies involving constructs of the UTAUT model. This study agrees with empirical studies such as Abu Afifa et al. (2022), Ferri et al. (2020), Handoko and Lantu (2021) and Khazaei (2020) on the importance of the four major UTAUT constructs to adopt BT. SI was perceived to be the most significant in terms of effect compared to the other three constructs. This finding is consistent with Tran and Nguyen (2021). Government banks are recognized for their role in creating positive awareness among their employees, including auditors, to use emerging technologies. These banks make use of training courses and specialized workshops to show the BT’s remarkable benefits to face intense competition from private counterparts, especially with regard to applying emerging technologies to attract customers. The three constructs PE, FC and EE influence auditors’ future intention to use BT. BT undoubtedly improves the job performance of auditors. They believe that future use of this technology will provide them with greater ability to track audit trails, detect errors and fraud, audit in real time and make more predictions to manage risk. Governmental banks also have sufficient resources to build their technological systems such as networks and databases. Therefore, the auditors of these banks anticipate that financial and technological support is available to adopt this technology. On the other hand, this new technology is not easy to apply, so auditors need more skills and knowledge to utilize BT as it is a very advanced technology.

Government banks focus on the cost characteristic in their adoption of BT due to the nature of government institutions which struggle to provide services at the lowest price to customers in line with the concept of public interest. Therefore, cost was the most directly influential in terms of the four characteristics of BT in government institutions according to
Falwadiya and Dhingra (2022). It was followed by security, system trust and transparency, respectively.

These features are associated with the workplace and the type of profession as well. Therefore, the results of the study’s structural model stress that auditors’ skills subsequently play a crucial mediating role between the characteristics of BT in government banks and their behavioural intention to use this technology. Auditors hold that security in government banks is the weightiest to exert influence on their future intentions to adopt BT. It is also affected by their accumulated general and technological skills, especially the significance of ensuring how data are stored, encrypted and retrieved through secure networks, to ensure the absence of cyber threats. It was followed by cost, transparency and system trust, respectively. Auditors in government banks still believe that reducing costs and risks is one of their most important priorities in adopting BT. In particular, they wish to reduce variable costs stemming from tracking audit trails and detecting errors and fraud. Additionally, some of the bases of the auditors’ skills are ensuring the accuracy and control of information, availability of data and the availability of auditability and verification of transactions in order to support transparency in BT. As for trust in BT, the nature and skill of the auditor make this feature at the bottom of the list of influential features that impact the auditors’ future intention to use BT. Auditors are committed to a crucial principle of activating professional scepticism to do the auditing profession.

5.2 Theoretical implications
This paper is considered one of the first endeavours to investigate the influential, intention-based factors in adopting blockchain in Iraqi governmental banks. We contribute to the existing literature on the adoption of blockchain in the accounting and auditing professions by researching the extension of UTAUT in light of the BT acceptance characteristics in government entities as well as the role of auditor’s skill acquired in dealing with emerging technologies. The study’s final model reveals some interesting results by refuting or proving previous studies. Concerning UTATU constructs, the study results support previous research on PE, EE, SI and FC as indicators of the acceptability of BI (Abu Afifa et al., 2022; Chang et al., 2022; Handoko and Lantu, 2021; Khazaei, 2020; Pieters et al., 2021). At the same time, as shown in the literature review of Falwadiya and Dhingra (2022), a significant effect was found in relation to cost, security, trust and transparency on the adoption of BT in government institutions. The vision of these government institutions centres on lowering costs and risks first, protecting data and information by activating cyber security and then trust and transparency foster business. Finally, the study found that the auditor’s skills as a mediating variable significantly affect their intention to use BT in future. The auditors’ possession of general and technological skills raises support for the characteristics of BT acceptance in government institutions, including banks. The auditor’s skill promotes security, cost, transparency and trust in the future adoption of BT. We enrich the previous literature with our focus on the characteristics of BT in government institutions as well as the skills of auditors. To the best knowledge of the researchers, this study is one of the few attempts at expanding UTAUT in the auditing profession.

5.3 Practical implications
This study also presents interesting findings for practitioners. The results demonstrate that the effect of EE on auditors’ behavioural intention to use BT in the future is still the weakest link. This finding asserts that respondents expect more support from their organizations to learn to use BT to take full advantage of its benefits. This is done by supporting the learning and experience of auditors in the framework of enhancing their general and technological skills that make them realize the ease of use of blockchain compared to other emerging
technology. Moreover, the results illustrate that system trust and transparency are the weakest influences on auditors’ behavioural intention to use BT in the future. This result underscores the need to devise training courses and real experiences for auditors to deal with this technology in order to increase their awareness of the advantages of trust and transparency of BT in the banking business. This paper provides a guide for regulatory organizations and bodies in the auditing profession. Investing in the auditor’s skill by widening his general and technological skills is crucial to the development of the profession. This calls on those organizations and bodies to put forward standards and guidelines for the application of BT in the accounting and auditing professions.

Academicians and practitioners in countries other than Iraq can learn and benefit from this study in several ways:

1. Understanding common challenges: The study’s findings highlight common challenges faced by auditors in adopting BT, such as the perceived difficulty in using the technology and the need for organizational support and training. Academicians and practitioners from different countries may encounter similar barriers when integrating BT into their auditing practices. By studying the experiences and insights from the Iraqi context, they can gain valuable knowledge to address these challenges effectively.

2. Identifying training needs: The study emphasizes the importance of providing training and real experiences for auditors to enhance their skills in using BT. This insight can be applicable globally, as the adoption of blockchain is a growing trend in the auditing profession worldwide. Academicians and practitioners from other countries can use this study to identify specific training needs and design targeted programmes to equip auditors with the necessary skills for BT adoption.

3. Recognizing key adoption drivers: The study identifies system trust and transparency as crucial factors influencing auditors’ intentions to adopt BT. This finding is relevant beyond Iraq and can guide academicians and practitioners in other jurisdictions to focus on building trust and ensuring transparency in the implementation of BT. Understanding these key adoption drivers can help organizations and regulatory bodies devise effective strategies to promote BT adoption.

4. Informing policy and standards: The paper suggests that regulatory organizations and bodies in the auditing profession should establish standards and guidelines for the application of BT. Academicians and practitioners from other countries can use this insight to advocate for similar policy initiatives in their jurisdictions. By leveraging the study’s recommendations, they can influence the development of a supportive regulatory framework for BT adoption in auditing practices.

5. Sharing best practices: The study provides insights into how auditors’ skills can be enhanced to facilitate BT adoption. Academicians and practitioners from different countries can share best practices and lessons learned from the Iraqi context to foster collaboration and mutual learning. This exchange of knowledge can accelerate the adoption of BT globally.

Overall, this study offers valuable insights into the challenges and opportunities related to blockchain adoption in the auditing profession, which can be applied by academicians and practitioners worldwide. By learning from the experiences of Iraqi auditors and understanding the strategies that can promote BT adoption, stakeholders from other countries in Asia can improve their preparedness and effectiveness in integrating BT into their audit practices.
6. Study determinants and future work
The study is not without limitations. First of all, the researchers focused on a specific context: the perspective of auditors in Iraqi governmental banks. At the same time, the insights of external auditors and academics were not researched. It is worth noting that institutions in the different business sectors such as taxation, insurance, education and healthcare may change the priority of factors affecting the behavioural intention of their auditors to adopt blockchain. Similarly, this research combines the UTAUT model with characteristics of BT in government organizations and auditor’s skill, but does not consider other constructs that may influence blockchain adoption (such as technology anxiety). Future research may use our model and combine it with other constructs. In the same way, they can analyse other contexts or even analyze the differences between countries and sectors.

References


Appendix

Measurement items

Behavioural intention to use BT:

1. I intend to use BT for auditing activities.
2. I plan to start implement BT in my and auditing activities.
I intend to use BT as much as possible.

Performance expectancy PE:
1. Using BT would enable me to improve auditing activities.
2. Using BT would make it easier to provide auditing services.
3. Using BT would enhance my effectiveness in accounting activities.
4. Using BT would enhance the efficiency of my job.

Effort expectancy EE:
1. I would find it easy to use BT for auditing activities.
2. Learning to use BT would be easy for me.
3. It would be easy for me to become skillful at using BT.
4. The use of BT for auditing activities is not characterized with stress.

Social influence SI:
1. People who influence my behaviour think that I should use BT.
2. People who are important to me think that I should use BT in auditing.
3. My boss think I should learn how to use BT for auditing activities.
4. Coworkers think that I should use BT in auditing activities.

Facilitating conditions FC:
1. I have the resources necessary to use BT for auditing activities.
2. I have the knowledge necessary to use BT.
3. BT is compatible with other auditing technologies I use.
4. I can get help from other auditors when I have difficulties using BT.

System trust ST:
1. Blockchain is trustworthy.
2. Blockchain is honest.
3. Blockchain is transparent and visible.
4. Blockchain prevents opportunists from making profits.

Cost C:
1. BT brings a reasonably return on investment (ROI).
2. At the current ROI, BT provides a cost-effective solution.
3. BT is a good value for make or save money.
4. BT is a good value for mitigate or reduce risk.

Transparency T:
1. BT-enabled auditing process is transparent.
2. BT network actors provide me with deep access to how BT-enabled auditing application works.
3. BT applications show detailed instructions on how to monitor transactions.
4. BT-enabled auditing process increases data availability.
5. BT-enabled auditing process decreases information asymmetry.
ARA

(6) I am familiarized with the track process of transactions in BT-enabled auditing applications.

Security SC:

(1) BT-enabled auditing provides easy verification of transactions
(2) BT-enabled auditing provides data accuracy and reliability.
(3) BT-enabled auditing provides data inalterability.
(4) BT-enabled auditing provides high security encryption.

Auditor skill AS:

(1) Job experience (#years).
(2) Auditing training courses (#No.).
(3) Using ICTs (#dailyhours).

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