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Research Article

Continuous Audits and Blockchain Technology within Stakeholder Theory: BIST IT Sector Companies in Türkiye

Gülşah KAZAK¹ , Namık Kemal ERDEMİR² 

ABSTRACT

This study evaluates the role of blockchain technology in continuous auditing through a stakeholder theory lens. We used a mixed-methods approach, including a survey of 133 IT sector participants from the BIST 100 index and interviews with three individuals. This study developed a new questionnaire and conducted reliability analyses, as well as exploratory and confirmatory factor analyses. Canonical correlation analysis was used to test hypotheses, and descriptive analysis was used to assess participant responses.

The results indicate statistically significant and moderate relationships between blockchain and continuous audits, blockchain and stakeholder theory and continuous audits and stakeholder theory, as all coefficients exceed the commonly accepted 0.30 effect size threshold, suggesting meaningful yet not strong associations with limited explanatory and predictive power. Executives and managers expressed distrust of blockchain but believed it could positively impact stakeholder theory and continuous audits, provided all stakeholders adopted it. The qualitative interview results reinforced the main findings, with participants highlighting the need for legal frameworks, particularly in accounting and auditing, to align blockchain with regulations.

Keywords: Blockchain Technology, Continuous Audit, Stakeholder Theory, Stakeholder, Audit.

JEL Classification Codes: M42, M140, M150

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INTRODUCTION

In the digital age, businesses must create value to differentiate themselves and gain a competitive advantage in the vast pool of big data. Combining this need with digital tools enables more transparent, accountable businesses that foster stakeholder trust. Continuous auditing contributes to these goals (Vernocchi and Toggwyler, 2021). Stakeholder theory underpins competitive advantage by promoting strong stakeholder relationships through effective strategies (Aktan and Börü, 2007, 9–10). Financial and non-financial reports are central to stakeholder relations and crucial for modern corporate governance, demanding alignment with stakeholders' growing information needs (Köse and Çetinel, 2017). Auditing plays a key role in building trust and transparency. Continuous auditing, enabled by information technology, reinforces this trust by enabling the frequent generation of financial and nonfinancial reports (Aboa, 2014, 11).

During the continuous audit process, businesses can leverage various technologies. The values sought through this process, and the necessary business models, should be designed in line with the data and technologies. The reliability of the reporting process depends on the alignment of the business model, value unity, and technological infrastructure. Each value chain element must be designed to foster and enhance trust, ensuring that all aspects of the audit chain are reliable (Vernocchi and Toggwyler, 2021).

Research indicates that blockchain technology enhances the reliability of auditing and reporting (Williams, 2020, 37). However, prior studies have primarily focused on standalone applications of blockchain in auditing, providing limited understanding of its integration with continuous auditing and stakeholder theory in strengthening corporate governance. This study addresses this gap by examining the combined use of blockchain and continuous auditing within a stakeholder-oriented framework in the context of

¹ Gülşah Kazak, Afyonkarahisar Health Sciences University, Türkiye, gulsah.kazak@afsu.edu.tr

² Namık Kemal Erdemir, Department of Business Administration, Karamanoğlu Mehmetbey University, Türkiye, nkerdemir@kmu.edu.tr

the IT sector, offering new empirical evidence on the impact and explanatory power of these relationships. By enabling reliable and transparent data recording, storage, and processing, blockchain technology ensures that reports meet stakeholders' needs while generating value. Blockchain's unchangeable, indelible, and tamper-resistant data increases report reliability, enabling error tracing and prevention. Integrating continuous audits with blockchain technology can strengthen corporate governance under stakeholder theory. Considering these advantages, this study examines the use of blockchain technology in the continuous audit process while aligning with stakeholder theory and evaluations of the IT sector.

This study provides a threefold contribution to the literature. First, it addresses blockchain technology, continuous auditing, and stakeholder theory within an integrated analytical framework, aiming to overcome the conceptual fragmentation present in the existing literature. Second, it offers empirical evidence on the multivariate nature of the relationships among these constructs through canonical correlation analysis. Third, it evaluates the explanatory and predictive capacity of these relationships, deriving implications for transparency, accountability, and corporate governance practices in the context of the IT sector.

THEORETICAL BACKGROUND

Stakeholder theory suggests that organizations should be managed for the benefit of all stakeholders, not only shareholders (Smith, 2015, 77). This theory posits that stronger relationships with external stakeholders make it easier to achieve business objectives. Building such relationships is based on trust, respect, and cooperation to ultimately help companies strengthen their competitive advantage by enhancing ties with external groups (Wilson, 2003). Rooted in normative foundations, stakeholder theory comprises a strategic management process within corporate governance. As a key proponent of this theory, Freeman argues that strategic management should direct human resources and consider the impact of all stakeholders on an organization, except for a special group (shareholders). Freeman highlights that management must account for stakeholder impact as part of its core business mission (Edward and Shannon, 1984). The theory is grounded in values such as respect, honesty, fairness, justice, loyalty, freedom of choice, and accountability regarding the outcomes of a firm's actions (Freeman *et al.*, 2018, 4).

Stakeholder theory emphasizes the interconnectedness of economic, political, social, and ethical issues (Freeman and Velamuri, 2006, 19). In 1970, Friedman argued that a business's social responsibility is to maximize profits. However, profit also depends on implicit contracts with nonshareholders, such as employee compensation. Therefore, the financial goal of companies is broader than the interests of their owners alone (Bonnafeous-Boucher and Rendtorff, 2016, 9).

Accounting systems and data are essential in managing stakeholder relationships and guiding business strategies. Accounting data enable stakeholders to assess interests and risks (Parmar, Freeman, *et al.*, 2010, 16–25). However, the link between social accounting data and financial performance remains debated, with Halal (1978) finding no correlation between social and economic performance. Cornell and Shapiro (1987) suggested that failing in social performance might be more costly than financial failure. Social responsibility is now considered a cultural norm for businesses (Davis, 1973), with companies balancing the needs of shareholders and stakeholders. Managers must meet stakeholder needs to strengthen social responsibility actions (Freeman, 1994; Malik, 2015; Harris, 2022, 23–24).

Stakeholder theory offers a distinct perspective on corporate earnings, suggesting that accounting standards should align stakeholder interests with business goals. Research highlights the importance of providing stakeholders with transparent financial information to enhance accountability and improve the quality of profits. Financial reporting serves two primary purposes: it aids shareholder decision-making and meets stakeholder needs (Miles, 2019, 6–8). Accounting information is crucial for fulfilling stakeholder theory expectations, while an effective audit system is necessary to verify its accuracy. Technological integration within continuous auditing can minimize errors and fraud.

Continuous auditing is a recurring process that is concurrent with financial transactions. It uses information technology to ensure reliability and control in real-time financial reporting, risk management, and oversight (Marques and Santos, 2017). This approach enhances data reliability before and during the creation of financial/non-financial reports, improving corporate accountability, risk management, and transparency. Continuous auditing increases trust in the auditing process by applying appropriate methods for stakeholder use, from document organization to report presentation (Erhan, 2012, 166).

To address issues that challenge traditional auditing, the AICPA/CICA (1999) defines continuous auditing as a methodology that allows independent auditors to provide written assurance on matters for which management is responsible based on auditor reports issued shortly after an event. Allesen *et al.* (2006) expanded the definition by distinguishing between continuous control monitoring and continuous data assurance (cited in Bumgarner and Vasarhelyi, 2018, 8).

Concurrent reporting and risk management significantly impact the audit process, particularly given the global adoption of corporate governance. This approach has increased legal obligations in both the public and private sectors, making the provision of timely information to financial markets essential. As a result, audit reports must be disclosed in a timely manner (Boydaş Hazar, 2013, 17). Advances in information technology have led to the development of software capable of generating simultaneous reports, enabling continuous auditing.

Continuous auditing leverages information and communication technologies, such as information systems, to enhance the audit process, detect anomalies in real time, and ensure adequate internal controls (Marques and Santos, 2017, 2). Research indicates that emerging technologies such as big data analytics, artificial intelligence, and blockchain have significantly impacted audit processes, planning, tools, and techniques (Joshi and Marthandan, 2020, 26).

Combined with data analysis, blockchain technology helps auditors address claims arising from transaction results, allowing them to focus on higher-level questions (icaew.com, 2019). Financial statements are prepared regularly to summarize a company's activities and are subject to auditing, with auditors expressing opinions on their accuracy. External parties, e.g., investors and credit risk managers, must trust that an audit is thorough and unbiased and that their firm has not provided false information. Blockchain technology can be key in ensuring transparency and trust (Inghirami, 2019, 11).

Blockchain ledgers can reliably store audit-related documents, with information shared continuously among relevant parties, including auditors, business partners, creditors, and government agencies. As more physical objects (e.g., machines, production lines, and inventory) gain digital capabilities and internet access, blockchain can facilitate simultaneous business process monitoring and physical security checks (Dai and Vasarhelyi, 2017, 14).

Blockchain transactions are immutable, ensuring continuous control, transparency, and data reliability, aligning with the core principles of accounting and continuous auditing (Coyne and McMickle, 2017, 102). Blockchain is software running on mobile devices, enabling internet connectivity. This software acts as a digital ledger that tracks data entered into the chain (Williams, 2020, 10–20), storing and verifying digital records in “blocks” that can be shared across parties. Copies of ledgers are distributed through nodes while documents are verified simultaneously. Since data are decentralized and stored across independent computers, altering or deleting records is extremely difficult (Dai and Vasarhelyi, 2017; Maffei *et al.*, 2021; Murray, 2016). A cryptographic method known as a hash value serves as a trust mechanism for recording transactions, functioning as a one-way mathematical function. Each block contains a hash value and the previous block's hash within the chain. The proof-of-work (PoW) system protects the chain (Alkan, 2021, 42). Transactions are encrypted using hash functions, which are one-way mathematical processes that convert data into a fixed-length bit string.

In this context, one-way means that the mapping process occurs in only one direction, making it nearly impossible to reverse-engineer the input from the output (Weib, 2017). A series of blocks created through the PoW system forms a blockchain. These blocks, which compile transaction data over a period, are linked in a chain, with each containing a timestamp, the previous block's hash, a nonce (a one-time key), and transaction information (FY2015 Report, 2016, 11). The connection allows the blockchain to preserve historical information. Verified transaction data, reviewed by the networks, is added to all participants' computers in chronological order, creating a distributed ledger of approved transactions. Financial institutions act as trusted third parties to control these ledgers, helping mitigate transaction risks (Holotiuik *et al.*, 2017, 914).

If businesses record all transactions on a blockchain-based accounting system, the data will be automatically encrypted, immutable, and accessible to all network users (Maffei *et al.*, 2021, 465). Each transaction being time-stamped makes the entire ledger visible, granting access to company transactions, income statements, and balance sheets. Blockchain can significantly improve audit efficiency and timeliness, enabling auditors to verify data accuracy and avoid potential moral hazards or agency issues (Inghirami, 2019, 11).

In a smart contract-based assurance system, managers and auditors can design firm-specific control protocols to monitor business processes, combining blockchain with techniques such as big data analytics and continuous auditing (Dai and Vasarhelyi, 2017, 14). Blockchain's tamper-proof nature is revolutionizing auditing, shifting from retrospective audits to constant, real-time control (Dai and Vasarhelyi, 2017, 14; Maffei *et al.*, 2021, 465). This technology allows instant transaction confirmation, enabling continuous auditing and early fraud detection (Schmitz and Leoni, 2019, 336). Auditors can also better understand the client's business as reviews extend beyond the annual reporting period (Schmitz and Leoni, 2019, 336).

However, to fully implement continuous auditing, businesses must record all transactions along the blockchain. Partial auditing can be undertaken by including selected transactions. Blockchain ensures timely transaction review, recording, and verification (Dai and Vasarhelyi, 2017; Kozłowski, 2018; Rozario and Vasarhelyi, 2018). Trust is central to the audit process, whereby organizations must close trust gaps by embedding reliable data and technology (Vernocchi, 2021). Research in the IT sector surrounding the BIST index in Turkey suggests that continuous auditing and blockchain can be applied, aligning with stakeholder theory.

METHODOLOGY

This study explores whether implementing continuous auditing within the scope of stakeholder theory and integrating blockchain technology into the continuous auditing infrastructure effectively enhances stakeholders' trust in business and the audit process.

The study was conducted in the IT sector of the BIST-100, focusing on companies known for their intensive use of technology and for applying stakeholder theory. The study sample comprised personnel and managers from accounting, auditing, finance, budgeting, reporting, and investor relations departments from 25 IT companies. Based on company reports, a total of 262 employees worked in these departments, recruited through convenience sampling.

Sample size calculations were based on the multivariate analysis guidelines by Hair, Anderson, and Tatham (1987) and Bryman and Cramer (2004), which suggest a sample size of at least five times the number of questions in the relevant section. With 18 questions on stakeholder theory (90 participants), 16 on continuous auditing (80

participants), and 14 on blockchain (70 participants), the study aimed to achieve a sample size that adequately represents the target population. In addition, the adequacy of the sample size was evaluated based on standard sample size estimation approaches, assuming a 90% confidence level and a 5% margin of error. In this context, the formula proposed by Yazıcıoğlu and Erdoğan (2004)

$$\begin{aligned}
 n_0 &= \frac{Z_{\alpha/2}^2 s^2}{d^2} \\
 d &= 0.05 \\
 s &= 0.5 \\
 Z_{0.05} &= 1.645 \\
 N &= 262 \\
 n_0 &= \frac{(1.645)^2 0.5^2}{0.05^2} = 270.6025 \\
 n &= \frac{n_0}{1 + n_0/N} \\
 n &= \frac{270.6025}{1 + 270.6025/262} = 133.1
 \end{aligned} \tag{1}$$

was applied, and the required minimum sample size was calculated to be approximately 118. The final sample of 133 participants exceeds this threshold, indicating that the sample size is statistically adequate. However, given the use of convenience sampling, the findings should be interpreted with caution in terms of generalizability.

The main question explored in this study is as follows:

How does blockchain technology affect continuous auditing in enterprises, its implementation, and meeting stakeholders' expectations regarding the auditing process?

Due to the impossibility of reaching all sectors and determining them by random methods, the study focused on the information technology sector, which uses and develops technology more intensively. Since the research did not include all companies, it was not appropriate to generalize the findings to these businesses. This study was conducted to measure the relationship between concepts in terms of research methods and to determine the source group's thoughts solely on the concepts.

Although the research was initially planned to include face-to-face surveys and qualitative interviews, logistical constraints, such as time limitations, the researcher's location, and cost factors, led to conducting the surveys and interviews via phone and online methods. Therefore, it is crucial to carefully consider the generalizability of the research while assessing its applicability to other contexts and populations. In preparing the survey forms, previously conducted studies in Türkiye related to the subject of this research, which had been tested for validity and reliability, were

utilized. Many items in these scales were revised and adapted to the scope and process of the present study.

The sources drawn upon include Ağgöl (2020), Güner (2021), Özcan (2019), Özgöl (2016), Solaket *et al.* (2017), Sultankhanova and Yanık (2021), and Ünsal and Kocaoğlu (2018).

To develop the questions in line with the study's purpose, the draft survey was reviewed by two professors in statistics, two professors and one associate professor in accounting and auditing, one assistant professor in marketing, and one assistant professor in management. As a result of these reviews and evaluations, the survey questions were revised twice and finalized accordingly.

To test the clarity and comprehensibility of the 87 survey questions, face-to-face interviews were conducted with two associate degree graduates, one bachelor's degree graduate, one master's degree graduate, and two doctoral degree graduates.

Following assessment of question clarity, the 87-item survey was administered to 63 participants in the sample group, and reliability analysis was conducted using an internal-consistency model (Cronbach's alpha) based on the average inter-item correlation in IBM SPSS Statistics (25.0.0). The reliability analysis was performed separately for each survey section. In the first section, which focuses on stakeholders' expectations from businesses under stakeholder theory, Cronbach's alpha values were high for business ethics (0.923), corporate social responsibility (CSR) (0.912), and sustainability (0.912), suggesting high reliability for this section. The second section, which examines whether businesses in the BIST 100 index use blockchain technology, yielded Cronbach's alpha values of 0.826 for nonblockchain-using firms and 0.786 for blockchain-using firms. Both sets of values suggest that the reliability for businesses using blockchain is high, whereas nonblockchain-using businesses exhibit acceptable reliability.

Two subsections were assessed in the final section, focused on the implementation of continuous auditing. For businesses that had not implemented continuous auditing, Cronbach's alpha was 0.580, indicating low reliability. However, for companies that had implemented continuous auditing, Cronbach's alpha was 0.782, indicating high reliability. "Although the Cronbach's alpha value of 0.580 for businesses not implementing continuous auditing indicates low internal consistency, it is considered acceptable in exploratory studies and for newly developed scales (Hair *et al.*, 2010).

This study used a mixed-methods approach. First, quantitative data were collected, followed by qualitative data collection and evaluation. Evaluation processes were separated and reported accordingly. Creswell's analysis method was applied, combining the quantitative and qualitative research results. Subsequently, comparisons were made between the findings, and the results from both analyses were integrated and reported (Creswell, 2017, 718–726).

For quantitative analysis, we first performed frequency analysis. We developed a new scale related to the research topic and conducted a confirmatory factor analysis to verify the factor structure determined in the exploratory factor analysis. We used the AMOS 24.0 program for confirmatory factor analysis.

We applied canonical correlation analysis in the quantitative analysis to measure the relationship between the hypotheses. Canonical correlation analysis was chosen because it allows for the simultaneous examination of relationships between multiple sets of variables, capturing the multivariate interactions among blockchain, continuous auditing, and stakeholder theory constructs more effectively than regression analysis, which considers dependent variables individually, or structural equation modeling, which would require a fully specified latent variable model. Before conducting this analysis, we performed normality and linearity tests using SPSS 26 for all analyses.

RESEARCH FINDINGS

Frequency Analysis

In the 2022 BIST 100 index, 25 out of 27 firms in the information technology sector participated in this research. The sample comprised 262 individuals, of whom 133 were participants. The number of participants from each company ranged from 1 to 14. Notably, only two firms (0.8%) had one participant each.

When evaluating participants by department, position within department, and duration of employment, the highest participation was in the accounting/finance department (50 participants, 27.5%) and the internal audit department (31 participants, 23.3%). The management and investor relations departments had the least participation, with only 10.5% (14 participants). The senior management group had the fewest participants, with only 1.5% (2 participants). Most participants reported working in their respective companies for 2–10 years, while a small percentage (1.5%) reported working for 11–15 years.

From a stakeholder theory perspective, Table I presents data on reports meeting stakeholder expectations and responses to questions about the implementation of these processes.

implemented continuous audits in their companies. Of these participants, 51.1% stated that the continuous audit practice meets the business's expectations, whereas 39.1% did not respond to this question.

Table 1: Frequency Analysis

In the business, all services and processes related to CSR and sustainability have been integrated into the published reports.	Frequency	Percent
Yes	59	44.4
No	29	21.8
I have no idea.	45	33.8
Total	133	100.0
Which sustainability reports and/or integrated reporting types are prepared in the business?	Frequency	Percent
A sustainability report is being prepared.	42	31.6
Integrated reporting is being organized.	24	18.0
Both reports are being prepared.	39	29.3
Neither report is being arranged.	28	21.1
Total	133	100.0
Corporate governance principles (transparency, accountability, fairness, and responsibility) are being implemented in the business.	Frequency	Percent
Yes	91	68.4
No	20	15.0
I have no idea.	22	16.5
Total	133	100.0
In the business, recommendations and information from stakeholders are being evaluated.	Frequency	Percent
Yes	123	92.5
No	2	1.5
I have no idea.	8	6.0
Total	133	100.0

Moreover, 57.9% (77) of the participants stated that they do not use blockchain technology in their departments within their businesses. Participants who indicated they use blockchain technology were asked to answer questions about their use of blockchain. Multiple answers were allowed. The most common area of use was the finance industry, with a 17.3% rate, followed by accounting/audit processes at 12.8%. Notably, 56.4% of the participants did not answer this question.

Exploratory Factor Analysis

The survey comprised sections on stakeholder theory, blockchain, and continuous auditing. Factor analysis was conducted for these sections, with the Kaiser–Meyer–Olkin (KMO) and Bartlett's test used to assess the suitability of the analysis.

The total explained variance values were examined to determine the factors regarding stakeholder theory,

Table 2: KMO and Barlett's Test

Test Results	Stakeholder Theory	Blockchain	Continuous Auditing
KMO	0.862	0.821	0.797
Barlett's (sig)	0.000	0.000	0.000

Source: HoQ with the rankings and final rankings

Additionally, 57.9% of the participants stated they were unfamiliar with continuous auditing. However, 60.9% of the participants reported that continuous auditing is applied in their businesses. The question about whether the continuous audit implemented in businesses met expectations was directed only to participants who indicated they had

blockchain, and continuous auditing sections. The number of factors were determined by evaluating total scores with eigenvalues of 1.0 and above. We performed a rotation when the factor eigenvalues were below 1.0.

Two rotation procedures were performed in the stakeholder theory section to extract three factors. The

commonality table was reviewed in the blockchain section during the initial analysis. Items S16-12, S16-13, and S16-4, with values below 0.30, were removed and repeated. After rotation, two factors were obtained from the total variance explained.

Two rotation procedures were conducted for the continuous auditing section, resulting in four factors. Since the eigenvalue for factors below the fourth one was 0.570 (less than 1.0), the rotation process was repeated, and the number of factors was limited to two. After confirming that the distribution of items was appropriate,

for a normal distribution. Similarly, the skewness values for blockchain (efficiency: -0.976 , causality: -1.522) and the kurtosis values (efficiency: 0.622 , causality: 2.251) are also within the normal distribution range. The skewness values for continuous monitoring (stakeholder functionality: -0.474 , control functionality: -0.093) and the kurtosis values (stakeholder functionality: -0.450 , control functionality: -0.356) fall within the expected range for a normal distribution.

Based on the above results, Table III presents the factor names and explanatory ratios for the identified factors.

Table 3: Factor Names and Explanation Ratios

Factor Sections	Factor Titles	Factor Explanation Ratio (%)
Stakeholder Theory	Factor 1: Corporate sustainability	54.180
	Factor 2: Work Ethics	7.529
	Factor 3: Corporate Social Responsibility	7.836
Blockchain	Factor 1: Blockchain Efficiency Factor	40.515
	Factor 2: Blockchain Causality Factor	6.800
Continuous Auditing	Factor 1: Stakeholder Functionality of Continuous Auditing	4.039
	Factor 2: Continuous Audit Management Functionality	1.140

the communalities were examined. The items “abuse and errors detected through continuous monitoring are reported to the authorities in a timely manner” (0.15) and “continuous monitoring reduces audit costs by increasing the effectiveness of the audit” (0.15) were removed due to having eigenvalues below 0.30.

In each section, a scree plot was reviewed to validate the number of factors identified by the factor analysis. The scree plot in all three sections was consistent with the number of factors. The distribution curve, which supports the items’ homogeneity, showed that items in each section were densely clustered in the same area, indicating a homogeneous distribution.

The skewness and kurtosis values were examined to assess whether the factors follow a normal distribution. Due to the small sample size, the ranges for kurtosis and skewness were determined using Kline’s (2011) recommended values of ± 3 for skewness and ± 10 for kurtosis (Demir, 2022, 399).

For stakeholder theory, the kurtosis values (ethics: 5.468, responsibility: 4.964, sustainability: 9.642) and skewness values (ethics: -1.904 , responsibility: -1.624 , sustainability: -2.978) are within the expected range

Table IV presents the variables assigned to the identified factors and factor loadings.

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA), which is considered an extension of exploratory factor analysis (Erkorkmaz *et al.*, 2013, 211–212), was used to define multivariate analyses (Aytaç and Öngen, 2012, 16). The factor fit of the CFA model was assessed (Erkorkmaz *et al.*, 2013, 212). In CFA interpretation, the assumption that all standardized values are 0 is considered perfect, meaning one-to-one (Yaşlıoğlu, 2017, 80). Literature suggests that it is acceptable for these standardized values to be below 1 (Aytaç and Öngen, 2012, 19). Table V provides the expected value ranges for the model to be considered compatible.

The value of χ^2/df ($\chi^2/df < 2$) being less than 2 indicates a perfect fit (Aytaç and Öngen, 2012, 17). This study’s values close to 2 were considered acceptable. The fit index values for stakeholder theory, blockchain, and continuous auditing CFA are provided in Table VI.

CFA was conducted separately for stakeholder theory, blockchain, and continuous auditing constructs to test the construct validity of the factor structures identified in the exploratory factor analysis.

Table 4: presents the variables assigned to the identified factors and factor loadings.

Factor Sections	Factor Titles	Factor Titles	Factor Load
Stakeholder Theory	Factor 1: Corporate sustainability	Environmental sustainability is essential.	0.578
		Social sustainability is important.	0.879
		Economic sustainability is important.	0.837
		The value added to the institution by conducting risk analysis within the scope of CSR and sustainability, as part of business management, is	0.777
		Your business needs to consider environmental, social, and ethical issues in	0.962
		Your business must consider environmental, social, and ethical issues that	0.364
		Transparency is important.	-0.521
	Factor 2: Work Ethics	Accountability is important.	-0.506
		Justice is important.	-0.715
		Obtaining reliable information is important.	-0.977
		Sustainability is important.	-0.867
	Factor 3: CSR	Social responsibility is important.	-0.932
		Ethical responsibility is important.	-0.970
		Legal responsibility is important.	-0.755
		The responsibility of philanthropy/charity is important.	-0.901
		The positive impacts of stakeholders on your business are important.	-0.918
Blockchain	Factor 1: Blockchain Efficiency Factor	I think blockchain technology will be used in every process in the future.	0.460
		Using blockchain technology in accounting/auditing will improve regulatory	0.549
		Using blockchain technology in the accounting/auditing field will increase	0.636
		Using blockchain technology in accounting/auditing will increase error	0.516
		Using blockchain technology in accounting/auditing will increase its	0.692
		Using blockchain technology in accounting will facilitate auditing processes.	0.385
	Factor 2: Blockchain Causality Factor	The use of blockchain technology in accounting can enhance audit	0.909
		My knowledge of blockchain technology is sufficient.	-0.886
		Using blockchain technology will reduce costs in many administrative and	-0.581
Continuous Auditing	Factor 1: Stakeholder Functionality of Continuous Auditing	I find the blockchain technology infrastructure reliable.	-0.696
		The use of blockchain technology in accounting and auditing will increase	-0.393
		Continuous auditing ensures compliance with laws and regulations regarding the resources consumed in the business by evaluating sustainability efforts.	0.394
		Continuous auditing provides the board of directors with the assurance and consultancy needed to assess the effectiveness, efficiency, and reliability of	0.430
	Factor 2: Continuous Audit Management	Continuous auditing ensures transparency in the auditing activities	0.927
		Continuous auditing ensures the accountability of the auditing activities	0.918
		Continuous auditing is more effective than traditional auditing and supports	0.611
		In implementing continuous auditing, the auditor must be able to use	0.415
		A senior manager is needed to implement continuous monitoring.	0.561
		There is a need for highly reliable information systems to implement	0.479
		Continuous auditing increases trust in financial data by preventing errors and	0.613
		Continuous auditing enhances the effectiveness of corporate governance, risk	0.561
		Continuous audit provides assurance for our corporate sustainability.	0.534

Table 5: CFA Compliance Value Ranges

Compliance Metrics	Good Harmony Values	Acceptable Compliance Values
RMSEA	0.00 < RMSEA < 0.05	0.05 < RMSEA < 0.10
GFI	0.95 < GFI < 1.00	0.90 < GFI < 0.95
AGFI	0.90 < AGFI < 1.00	0.85 < AGFI < 0.90
NFI	0.95 < NFI < 1.00	0.90 < NFI < 0.95
CFI	0.95 < CFI < 1.00	0.90 < CFI < 0.95
RFI	0.90 < RFI < 1.00	0.85 < RFI < 0.90

For the stakeholder theory construct, the model fit indices indicated an acceptable level of fit ($\chi^2/df = 1.679$; CFI = 0.886; NFI = 0.860; GFI = 0.845; AGFI = 0.726; RFI = 0.874; RMSEA = 0.067). χ^2/df values below 3 and RMSEA values below 0.08 suggest acceptable model fit. Although the CFI and NFI values were slightly below the ideal threshold of 0.90, they remain within the acceptable range for social sciences research, particularly considering sample size limitations.

For the blockchain construct, model fit indices demonstrated an overall acceptable fit ($\chi^2/df = 2.103$; CFI = 0.921; NFI = 0.862; GFI = 0.903; AGFI = 0.844; RFI = 0.815; RMSEA = 0.091). The CFI value exceeding 0.90 indicates a good comparative fit. Although RMSEA slightly exceeds the conventional threshold of 0.08, values close to 0.10 are considered tolerable in models with moderate sample sizes and complex structures.

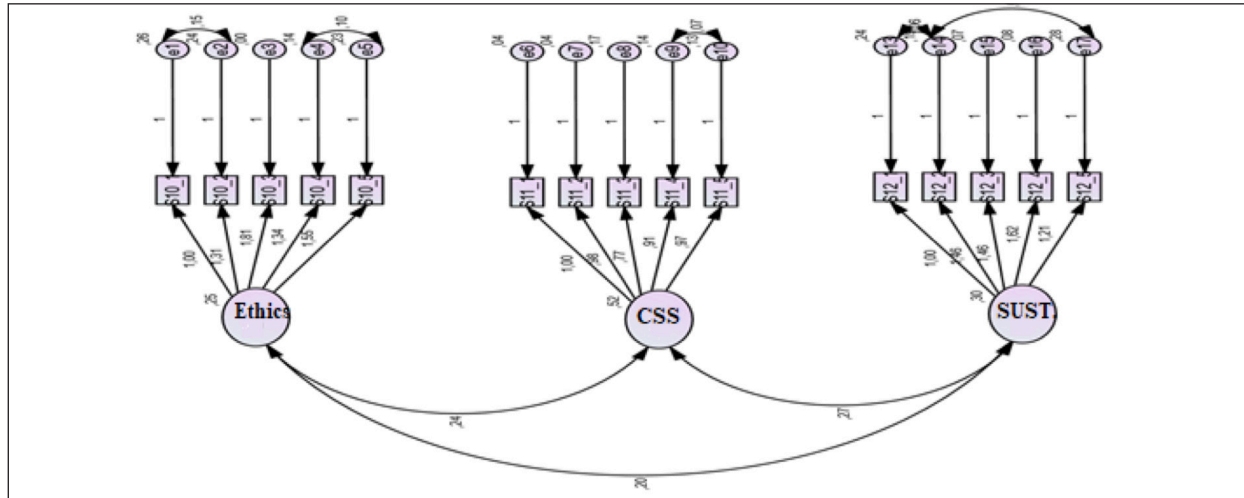


Figure 1: Stake holder theory with standardized results and first-order CFA

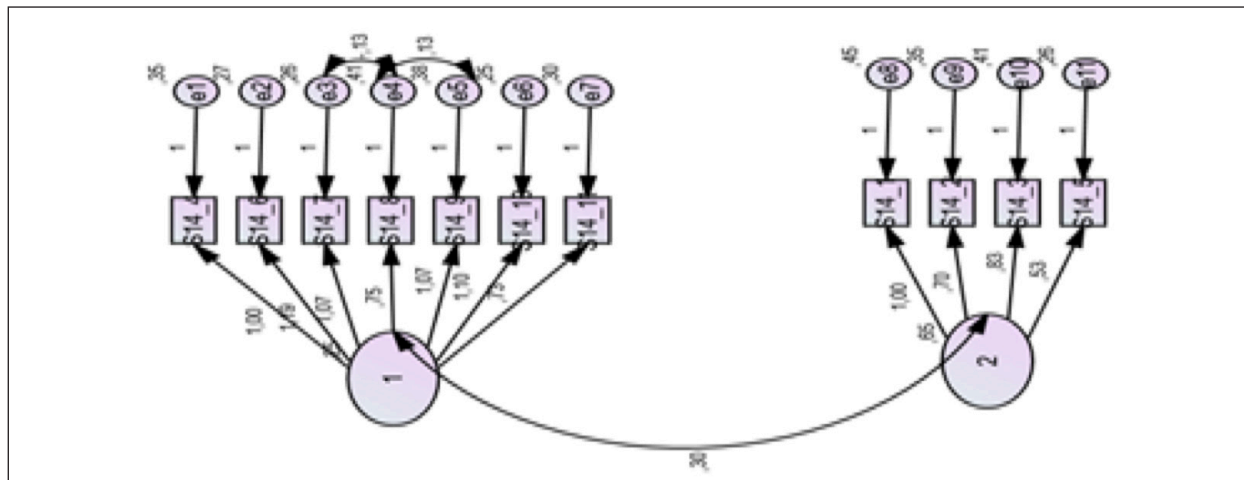


Figure 2: Blockchain with standardized results and first-level CFA

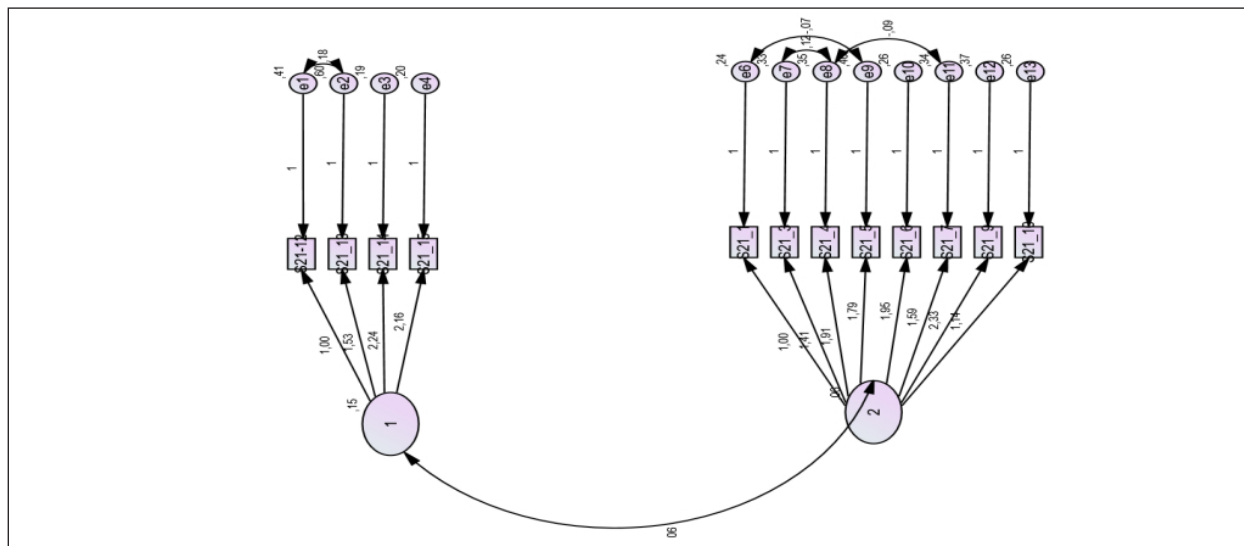


Figure 3: Continuous auditing with standardized results and first-level CFA

For the continuous auditing construct, the results also indicate an acceptable level of model fit ($\chi^2/df = 2.149$; CFI = 0.900; NFI = 0.832; GFI = 0.890; AGFI = 0.825; RFI = 0.774; RMSEA = 0.093). The χ^2/df ratio below 3 and the CFI value at 0.90 support an acceptable fit. Although the

RMSEA is slightly above the ideal cut-off, it remains within a tolerable range in applied behavioral research contexts.

Overall, the findings provide empirical support for the construct validity of the three-factor structures. Model modifications were implemented by allowing

Table 6: Fit Indices for Confirmatory Factor Analysis

	X²/df	P	CFI	NFI	GFI	AGFI	RFI	RMSEA
Stakeholder theory	1.679	0.000	0.886	0.860	0.845	0.726	0.874	0.067
Blockchain	2.103	0.000	0.921	0.862	0.903	0.844	0.815	0.091
Continuous auditing	2.149	0.000	0.900	0.832	0.890	0.825	0.774	0.093

covariance between certain item error terms based on modification indices. These covariances were introduced only among items within the same latent construct and were theoretically justified by content similarity. The modifications resulted in improved fit indices without altering the conceptual structure of the scales.

Descriptive Analysis of Independent Variables and Subdimensions

We evaluated participation averages across the subdimensions of stakeholder theory, blockchain, and continuous auditing, based on individuals' positions, employment durations, and departments. By analyzing participants' responses, we developed conclusions and recommendations. Table VII presents the comparison of subdimensions and average trust in blockchain technology by position, tenure, and department.

In evaluating the averages, we assumed that the intervals were equal. In calculating the score range, the arithmetic mean score was 0.80. ((score range = (highest value–lowest value)/5 = (5–4)/5 = 4/5 = 0.80)). The calculation indicates that the arithmetic mean is interpreted as follows: 1.00–1.80 means “strongly disagree/not important at all,” 1.81–2.60 means “disagree/unimportant,” 2.61–3.40 means “undecided/somewhat important,” 3.41–4.20 means “agree/important,” and 4.21–5.00 means “strongly agree/very important” (Kaplanoglu, 2014, p. 138).

Table VIII shows that all participants found the expressions in the subdimensions of the stakeholder theory concept (ethics, CSR, and corporate sustainability) important. Overall, participants agreed with the subdimensions of continuous auditing (stakeholder functionality and management functionality) and blockchain technology (efficiency and causality). We also observed that top executives did not trust blockchain technology, while managers and employees with 16 or more years of company tenure exhibited an indecisive approach. Using analysis of variance (ANOVA), we evaluated the significance of the relationships among position held in the business, working duration, and

departments worked in, as well as the subdimensions of these factors.

The findings indicate a statistically significant difference between the position held in the business and the subdimensions of the blockchain causality factor (0.001; $P < 0.05$). We found significant differences between the duration of employment and the subdimensions of blockchain effectiveness (0.028), CSR (0.02), and continuous audit stakeholder functionality (0.008). Furthermore, a significant relationship was observed between the business departments and the stakeholder theory-based groups of corporate sustainability (0.000), blockchain causality (0.008), continuous audit stakeholder functionality (0.030), and constant audit management functionality (0.024). We conducted a post-hoc analysis to determine which groups differed among those with significant differences.

The post-hoc test results regarding the source of the difference between the subdimensions of blockchain causality show significant differences between several groups. Specifically, there were differences between the senior management group and the manager (0.008), the expert (0.003), the director and assistant manager (0.001), and the staff (0.002) groups. Additionally, we found significant differences between the manager and director (0.026) groups, between the expert and director (0.007) groups, between the director and director (0.001) groups, and between the director and assistant manager (0.001) and staff (0.005) groups.

According to the post-hoc test results on the source of differences among the KSS, blockchain activity, and continuous audit stakeholder functionality subdimensions, the LSD multiple-comparison tests identified significant differences in the KSS subdimension. We observed significant differences between the group with 0–1 year of work experience and the 2–4 years (0.004), 5–7 years (0.010) groups, between the group with 2–4 years of work experience and the 8–10 years (0.011) group, and between the group with 5–7 years of work experience and the 8–10 years (0.036)

Table 7: Subdimensions and Average Trust in Blockchain Technology According to Position in Business, Working Hours, and Departments

Position in the business	Ethics	Responsibility	Sustainability	Blockchain efficiency	Blockchain causality	C. Stakeholder functionality	C.A. Management functionality	Blockchain/Trust
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Senior Executive	4.20	4.20	4.00	4.14	2.75	3.80	3.50	2.00
Manager	4.41	4.74	4.82	4.56	4.07	3.74	3.97	4.21
Expert	4.53	4.24	4.77	4.32	4.27	4.00	4.06	3.91
Director	4.24	4.49	4.77	4.52	4.41	3.73	4.01	4.35
Headmaster	4.65	4.50	4.58	4.28	3.25	4.05	4.22	3.00
Assistant Manager	4.47	4.22	4.77	4.42	4.41	3.41	3.91	4.58
Staff	4.20	4.17	4.37	4.23	4.21	3.87	4.16	4.28
Professional Time	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
0–1 year	4.86	4.72	4.70	4.06	3.95	4.30	4.21	4.00
2–4 years	4.21	4.11	4.31	4.15	4.14	3.90	4.04	4.29
5–7 years	4.20	4.22	4.65	4.43	4.28	3.59	4.04	4.25
8–10 years	4.52	4.56	4.73	4.51	4.33	3.91	4.18	4.30
11–15 years	4.20	4.50	5.00	4.71	4.62	3.10	3.69	5.00
16 years +	4.10	4.10	4.42	4.50	3.62	3.50	3.56	3.00
Department	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Management	4.63	4.46	4.52	4.29	4.07	3.93	3.95	4.07
Accounting/Finance	4.18	4.14	4.26	4.26	3.98	3.96	4.22	4.02
Budget and Reporting	4.51	4.46	4.88	4.23	4.29	3.69	4.02	4.21
Internal Audit	4.19	4.39	4.80	4.49	4.47	3.68	4.00	4.42
Investor Relations	4.40	4.31	4.82	4.65	4.50	3.37	3.86	4.71
Total	573.40	572.80	609.17	578.57	560.50	502.80	540.13	562.00

Table 8: ANOVA between-group significance test results

ANOVA							
	Ethics	CSS	Sustainability	Blockchain Efficiency	Blockchain Causality	C. Stakeholder Functionality	C.A. Management Functionality
	P	P	P	P	P	P	P
Position	0.635	0.106	0.056	0.214	0.001	0.190	0.120
Professional Time	0.078	0.020	0.162	0.028	0.225	0.008	0.073
Department	0.147	0.274	0.000	0.052	0.008	0.030	0.024

group. In the blockchain activity sub-dimension, the LSD multiple-comparison tests revealed significant differences between the group with 0–1 years of work experience and the 5–7 years (0.041), 8–10 years (0.021) groups and between the group with 2–4 years of work experience and the 5–7 years (0.018) and 8–10 years (0.009) groups.

In the sub-dimension of continuous audit stakeholder functionality, the LSD multiple-comparison tests identified significant differences between the group with 0–1 year of work experience and the groups with 5–7 years (0.0402), 11–15 years (0.018), and 16+ years (0.038). Differences were also observed between the group with 2–4 years of work experience and those

Table 9: Post-Hoc (LSD) Analysis

Independent Variable	(I) Position	(J) Position	(I-J)	Sh	P. < 0.05
Blockchain Causality	Senior Executive	Manager	-1.32143*	0.48709	0.008
		Expert	-1.52273*	0.49533	0.003
		Director	-1.66304*	0.47503	0.001
		Assistant Manager	-1.65789*	0.47902	0.001
		Staff	-1.46250*	0.46317	0.002
	Headmaster	Manager	0.82143*	0.36532	0.026
		Expert	1.02273*	0.37623	0.007
		Director	1.16304*	0.34908	0.001
		Assistant Manager	-1.15789*	0.35448	0.001
		Staff	-0.96250*	0.33275	0.005
Independent Variable	(I) Position	(J) Position	(I-J)	Sh	P.<0.05
CSS	0-1 year	2-4 years	0.70571*	0.23988	0.004
		5-7 years	0.59818*	0.22998	0.010
	2-4 years	8-10 years	-0.44127*	0.17136	0.011
		8-10 years	-0.33374*	0.15721	0.036
Blockchain Efficiency	0-1 year	5-7 years	-0.36883*	0.17893	0.041
		8-10 years	-0.45079*	0.19267	0.021
	2-4 years	5-7 years	-0.27087*	0.11254	0.018
		8-10 years	-0.35283*	0.13332	0.009
C. Stakeholder Functionality	0-1 year	5-7 years	0.70727*	0.22228	0.002
		11-15 years	1.20000*	0.50083	0.018
		16 years+	0.80000*	0.38252	0.038
	2-4 years	5-7 years	0.30442*	0.13981	0.031
	5-7 years	8-10 years	-0.31838*	0.15194	0.038
Independent Variable	(I) Position	(J) Position	(I-J)	Sh	P.<0.05
C. Sustainability	Accounting/Finance	Budget and Reporting	-0.61833*	0.16524	0.000
		Internal Audit	-0.53903*	0.15211	0.001
		Investor Relations	-0.56476*	0.20120	0.006
Blockchain Causality	Accounting/Finance	Internal Audit	-0.48774*	0.15115	0.002
		Investor Relations	-0.52000*	0.19993	0.010
C. Stakeholder Functionality	Management	Investor Relations	0.55714*	0.24805	0.026
	Accounting/Finance	Investor Relations	0.58857*	0.19844	0.004
C.A. Management Functionality	Management	Accounting/Finance	-0.26857*	0.12955	0.040
	Accounting/Finance	Internal Audit	0.22306*	0.09794	0.024
		Investor Relations	0.35786*	0.12955	0.007

with 5-7 years (0.031) and between those with 5-7 years and those with 8-10 years (0.0318). Significant differences were found in the post-hoc test regarding the sources of differences between the subdimensions of corporate sustainability, blockchain causality, continuous audit stakeholder functionality, and continuous audit management functionality. Specifically, there was a significant difference between the groups working in the accounting and finance departments, budget and reporting (0.000), internal audit (0.001), and investor relations (0.006) department groups.

In the sub-dimension of continuous audit stakeholder functionality, the LSD multiple-comparison tests identified significant differences between the group with 0-1 years of work experience and the groups with 5-7 years (0.0402), 11-15 years (0.018), and 16+ years (0.038). Differences were also observed between the group with 2-4 years of work experience and those with 5-7 years (0.031) and between those with 5-7 years and those with 8-10 years (0.0318). Significant differences were found in the post-hoc test regarding the sources of differences between the subdimensions of corporate sustainability, blockchain

Table 10: Eta-Squared Results

Eta-Squared						
	CSS	Sustainability	Blockchain Efficiency	Blockchain Causality	C. Stakeholder Functionality	C.A. Management Functionality
	N ²	N ²	N ²	N ²	N ²	N ²
Position	-	-	-	0.160	-	-
Operating time	0.099	-	0.093	-	0.114	-
Department	-	0.145	-	0.101	0.080	0.084

causality, continuous audit stakeholder functionality, and continuous audit management functionality. Specifically, there was a significant difference between the groups working in the accounting and finance departments, budget and reporting (0.000), internal audit (0.001), and investor relations (0.006) department groups.

In the blockchain causality sub-dimension, the LSD multiple-comparison tests revealed significant differences between the accounting and finance department and the internal audit (0.002) and investor relations (0.010) department groups. In the sub-dimension of continuous audit stakeholder functionality, the LSD multiple-comparison tests identified significant differences between the group working in the accounting and finance department and the investor relations department (0.004) and between the group working in the management department and the investor relations department (0.026).

Finally, in the sub-dimension of continuous audit management functionality, significant differences were found between the group working in the accounting and finance department and the investor relations (0.007) and internal audit (0.024) department groups, as well as between the group working in the management department and the accounting and finance (0.040) department. To determine the magnitude of the differences, we examined the effect size using eta squared. The results were interpreted according to the effect size ranges proposed by Cohen (1988), where 0.01 = small effect, 0.06 = medium effect, and 0.14 = large effect (Arslan, 2019).

The eta-squared results show a high correlation (0.160) between the position groups within the organization and the blockchain causality subdimensions, a moderate correlation between the duration of employment and the subdimensions of CSR (0.099), blockchain effectiveness (0.093), and continuous audit stakeholder functionality

(0.114), and a high correlation between the department group and the subdimension of corporate sustainability (0.145). Additionally, we found moderate differences between the blockchain causality (0.101), continuous audit stakeholder functionality (0.080), and continuous audit management functionality (0.084) sub dimensions.

Canonical Correlation Analysis Results

This study used canonical correlation analysis to evaluate whether there is a relationship between variable sets. The analysis indicates that the data were normally distributed. In addition to the normal distribution, we assessed linearity using a canonical correlation test. According to Hair *et al.* (2010), multivariate data analysis values should be below 700, and VIF values should be four or lower. The analysis results indicate that the correlation value was less than 700, and the VIF value was 1.058. Based on these values, the study ensures linearity. As a result, we concluded that canonical correlation can be applied to research.

We conducted a correlation analysis to evaluate each of the three hypotheses. We assessed the results based on the 0.30 critical value (Tabachnick and Fidell, 2012).

The hypotheses are as follows:

H1: Blockchain technology positively impacts continuous auditing.

H2: Using blockchain technology positively impacts the stakeholder theory framework.

H3: Continuous audit practice positively impacts the stakeholder theory framework.

H1 values regarding correlations between blockchain and continuous audit variables are presented in Table XI.

Table 11: Correlation Between Blockchain Variables and Continuous Audit Variables

(First Canonical Variate)					
X Variable Set			Y Variable Set		
Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients	Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients
Blockchain Efficiency factor(X1)	-0.60	0.031	C. Stakeholder Functionality (Y1)	0.97	0.79
Blockchain Causality factor (Y1)	-1.00	-1.02	C.A. Management Functionality (Y2)	0.77	0.30
Variance Percentage	0.68	-	Variance Percentage	0.76	-
(Redundancy)	0.07	-	(Redundancy)	0.08	-

The canonical correlation analysis revealed a statistically significant but moderate relationship between the variable sets ($r = 0.32$; $p = 0.004$). Although the effect size exceeds the 0.30 threshold, indicating a meaningful association, the magnitude suggests limited explanatory power. Thus, the relationship exists but is insufficient to imply robust predictive dominance.

In the Y set, continuous audit stakeholder functionality (0.97) showed the highest contribution, demonstrating a strong positive alignment with the canonical variation. This supports the theoretical relevance of stakeholder-related dimensions within continuous auditing.

Variance explanation ratios (0.68 for X and 0.76 for Y) and redundancy values (0.07 and 0.08) indicate partial explanatory capacity. While the model identifies

Table 12: Correlation Between Blockchain Variables and Stakeholder Theory Variables

(First Canonical Variate))					
X Variable Set			Y Variable Set		
Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients	Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients
Blockchain Efficiency factor(X1)	-0.921	-0.613	Ethics (Y1)	-0.690	0.037
Blockchain Causality factor (Y1)	-0.877	-0.497	CSS (Y2)	-0.684	-0.046
Variance Percentage	0.809	-	Sustainability	-0.999	-0.994
(Redundancy)	0.191	-	Variance Percentage	0.647	-
			(Redundancy)	0.149	-

The blockchain causality factor (-1.00) contributed most to the X set, with an inverse relationship: stronger perceptions of causality correspond to lower canonical variate scores. This suggests a complex, potentially nonlinear influence of perceptions of blockchain on continuous auditing variables.

meaningful relationships, it explains only a limited portion of the variance in the original variables. Therefore, results should be interpreted cautiously, emphasizing directionality and moderate effect size rather than strong causal inference.

Table 13: Correlation Between Continuous Audit Variables and Stakeholder Theory Variables

(First Canonical Variate)					
X Variable Set			Y Variable Set		
Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients	Variables	Canonical Coefficients (Correlation)	Standardized Canonical Coefficients
C. Stakeholder Functionality (X1)	0.913	0.619	Ethics (Y1)	−0.252	0.593
C.A. Management Functionality (Y1)	0.865	0.503	CSS (Y2)	−0.316	0.281
Variance Percentage	0.79	-	Sustainability	−0.852	−1.454
(Redundancy)	0.13	-	Variance Percentage	0.30	-
			(Redundancy)	0.05	-

Overall, the findings support a statistically significant but moderate association among blockchain, continuous auditing, and stakeholder theory variables, consistent with the reviewer's request for careful interpretation of effect magnitude and directional relationships.

The canonical correlation analysis for blockchain and stakeholder theory variables revealed a statistically significant relationship ($r = 0.48$; $p = 0.000$). The effect size exceeds the 0.30 threshold, indicating a meaningful association; however, the magnitude suggests a moderate relationship rather than a strong predictive linkage. This supports the existence of connectivity between the variable sets, but with limited explanatory dominance.

Within the X variable set, the strongest contribution came from blockchain efficiency (−0.613), indicating an inverse relationship: higher perceptions of efficiency correspond to lower canonical variate scores. In the Y set, sustainability (−0.994) exhibited the highest standardized coefficient, also indicating a negative association. These findings suggest that improvements in perceptions of blockchain may coincide with reductions in certain stakeholder-oriented dimensions, reflecting a complex, inverse relationship.

The variance-explained ratio for the X set (0.809) indicates that the canonical variate captures a substantial portion of the variance in the blockchain variables. In contrast, the redundancy value (0.191) suggests partial explanatory power for the original data. For the Y set, variance explanation (0.647) and redundancy (0.149) similarly reflect meaningful but incomplete coverage of stakeholder theory dimensions.

Overall, the results confirm a statistically significant yet moderate relationship between blockchain and

stakeholder theory variables. The inverse directional coefficients highlight that increases in one construct are associated with decreases in the other, supporting H2 but emphasizing that the effect size is moderate and context dependent. Consequently, interpretations should focus on directional tendencies and partial explanatory power rather than strong causal assertions.

The canonical correlation analysis between continuous audit and stakeholder theory variables revealed a statistically significant relationship ($r = 0.40$; $p = 0.000$). Although the effect size exceeds the 0.30 threshold and indicates a meaningful association, the magnitude reflects moderate explanatory power rather than a strong predictive relationship. This suggests that while the constructs are connected, the relationship is partial and context dependent.

Within the continuous audit variable set, stakeholder functionality (0.913) exhibited the highest canonical coefficient and explanatory contribution, demonstrating a strong positive alignment with the canonical variate. This supports the notion that stakeholder-oriented dimensions of continuous auditing are meaningfully associated with the analytical framework of stakeholder theory.

In the stakeholder theory set, sustainability (−0.852) showed the strongest (negative) association, indicating an inverse directional relationship. The negative coefficient suggests that increases in continuous audit-related stakeholder functionality are associated with decreases in sustainability-related perceptions within the canonical structure. Cross-evaluation further indicates that continuous audit stakeholder functionality maintained the strongest relationship with the stakeholder set (0.37). At the same time, sustainability exhibited the most

pronounced negative relationship with continuous audit variables (-0.34).

The variance explanation (0.79 for the continuous audit set and 0.30 for the stakeholder set) and the redundancy values (0.13 and 0.05, respectively) demonstrate partial explanatory capacity. While the canonical model captures meaningful relationships, it explains only a limited proportion of variance in the original variables. Therefore, results should be interpreted with caution, emphasizing directional tendencies and moderate effect size rather than strong causal inference.

Overall, the findings support H3 by confirming a statistically significant relationship between continuous audit and stakeholder theory variables. However, the moderate effect size and inverse directional coefficients indicate that the association is complex and partial, highlighting the need for cautious interpretation. further empirical investigation.

Qualitative Analysis

This study employed an interview method as a qualitative data collection technique to complement the quantitative data. The goal was to provide more detail, examples, and explanations, and ensure the reliability of the quantitative analysis results with the qualitative findings. For this purpose, managers from

the 27 companies listed in the BIST-100 index, who were considered to better understand the subject and the in businesses' activities, were selected for interviews. Three participants from these companies who agreed to the interview and audio recording were contacted (Table XIV).

Interviews were conducted with participants who agreed to have their voices recorded, and the MAXQDA 2020 qualitative analysis program was used to analyze the recorded data. Subcodes were created from participants' responses to predefined themes, as listed in Table XV.

The codes were organized according to the research model, evaluating both positive and negative perceptions regarding continuous auditing and blockchain technology. The negative perception of blockchain technology was 59.4%, whereas the positive perception was 40.6% in the subcode statistics. Notably, the subcode statistics recorded no negative perceptions regarding continuous auditing.

The code cloud analysis revealed that the theme participants contributed to the most and focused on was blockchain technology, followed by continuous auditing, specifically the positive thought code related to it. The participants' lowest contribution pertained to reports on stakeholder theory.

Table 14: Interview Participants

Participant	Company	Department	Position	Gender
K1	F17	Financial Affairs	Senior	Male
K2	F6	Accounting	Accounting Manager	Male
K3	F6	Finance	Finance Manager	Male

Table 15: Code System

Code System	Frequency
Code system	112
• Blockchain technology	22
➤ Positive thought	12
➤ Negative thought	0
❖ Not trustworthy	10
❖ Gaps in legal regulations	8
• Stakeholder theory	0
➤ Stakeholder theory fundamentals	7
➤ Reporting	5
➤ Effect of continuous auditing	17
• Continuous auditing	0
➤ Positive thought	17
❖ Must be implemented	7
❖ Implementation in businesses	7
➤ Negative thought	0

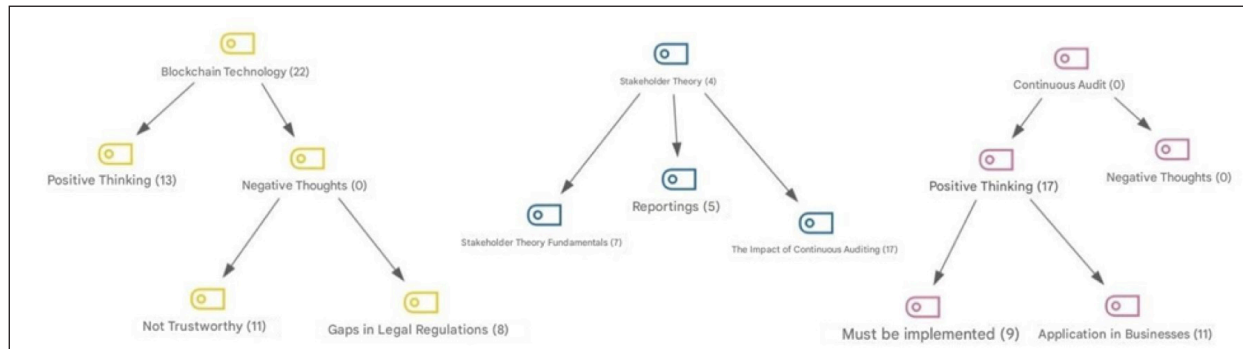


Figure 5: Code Map

The code map in Figure 5 shows positive and negative perspectives regarding blockchain technology. Regarding negative opinions, all participants stated that they did not find blockchain technology reliable.

CONCLUSION

Based on stakeholder theory, this study has examined the potential effects of using blockchain technology in the continuous auditing process. We conducted a literature review on studies exploring the interaction between stakeholder theory, continuous auditing, and blockchain technology. This was followed by developing a research model to measure the relationships between concepts. The established research model identified overlapping relationships among blockchain technology and continuous auditing, continuous auditing and stakeholder theory, and blockchain technology and stakeholder theory. Thus, H1, H2, and H3 are supported.

The findings indicate that stakeholders require reliable information from businesses and that businesses must address environmental, social, and ethical issues in their

activities. The qualitative analysis results also support this assumption, as all interviewees emphasized the importance of trust. Within the scope of CSR, responses to the statement “ethical responsibility is important” reflect how much stakeholders value ethical behavior. Moreover, literature supports the expectation of transparency in accounting and auditing processes within stakeholder theory, and a similar attitude is evident in the research. Sultankhanova and Yanık (2021) observed high participation rates in their study regarding the importance of auditing in ensuring trust in sustainability and financial reports.

The findings indicate that participants lacked knowledge about the concept of continuous auditing. This differs from Ağgöl and Öndeş (2020), where the majority of participants from ISO 500 large industrial enterprises were familiar with the concept. We also found that constant auditing is actively implemented in businesses, aligning with auditing expectations. This allows for observing and controlling risks and helps identify errors and fraud in advance. These findings align with those of Ağgöl and Öndeş (2020).



Figure 4: CodeCloud

The study demonstrates that continuous auditing enhances transparency, prevents errors and fraud, and builds trust in financial data, thereby aiding management decision-making, reflecting distinct advantages compared with traditional auditing. Similarly, Kahyaoğlu, Sarıkaya, and Topal (2020) found that continuous auditing improves auditors' understanding of audit and risk landscapes.

The findings suggest that continuous auditing enables the examination of past performance, the application of big data, quantitative analysis, predictive modeling, and fact-based management for integrated decision-making. The results show that participants positively evaluated the subdimensions of continuous auditing effectiveness, supported by qualitative interviews with managers.

The study revealed that while participants reported insufficient knowledge of blockchain technology and its processes, they believed its adoption could improve audit effectiveness. Concerns about the technology's reliability in accounting and auditing persisted, and the quantitative analysis supported this perspective. Participants acknowledged their current lack of expertise but anticipated advancements in blockchain and the need to adapt to these changes. Despite limited trust in its current state, they recognized its potential to enhance oversight and meet stakeholder expectations. These findings align with Güner (2021), who identified expectations of increased transparency, efficiency, reliability, and cost advantages from blockchain technology. Güner also concluded that involving all stakeholders in blockchain systems would enhance efficiency. Interviewees noted that companies are increasingly applying corporate governance principles aligned with stakeholder theory, with a greater emphasis on social responsibility initiatives. They highlighted the critical role of continuous auditing mechanisms in ensuring sustainability reports are prepared, reviewed by internal audit units, and published when appropriate.

Despite the general mistrust of blockchain technology and the lack of regulations governing virtual currencies, interviewees expressed a willingness to adopt blockchain technology if conditions improved, emphasizing the importance of establishing regulations. Quantitative analysis also showed that participants believed that blockchain would eventually be used in accounting and auditing, positively impacting various processes. This aligns with Güner's (2021) research, which predicted that blockchain's influence in accounting would grow. The study found that stakeholder theory, which focuses on meeting the expectations of all stakeholders, including

shareholders, was reflected in participants' views. While 71.4% of participants prioritized shareholders' expectations, they acknowledged the need to develop methods to meet the expectations of other stakeholders through technology, offering significant advantages in cost and time.

Based on the above, continuous auditing is essential to meet stakeholder expectations. However, businesses must invest in technological infrastructure and software for effective implementation. The literature primarily emphasizes the theoretical aspects of continuous auditing, highlighting the need for more practical cooperation between application and scientific development in this area. Despite general skepticism about blockchain technology, participants believed that broader adoption, more studies on its applications, and regulatory frameworks would improve its perception and reliability. Supporting evidence from Güner (2021) emphasizes that educating businesses and ensuring trust through exemplary use cases will be crucial for blockchain's widespread adoption. The effectiveness of blockchain technology will depend on the active participation of all stakeholders and businesses.

One of the key implications of the study is that although participants exhibit relatively low overall levels of trust in blockchain technology, they nonetheless perceive this technology as having a positive contribution to audit processes. This seemingly contradictory perception can be explained by models in the literature that suggest the adoption of technological innovations depends not only on trust but also on perceived usefulness and contextual factors. For example, the Technology Acceptance Model (TAM) demonstrates that users' intention to adopt a technology is associated with perceived usefulness in addition to trust (Shrestha & Vassileva, 2019). Furthermore, blockchain adoption studies have identified TAM as one of the most widely used acceptance models, as it has been applied across numerous blockchain application domains to evaluate user acceptance (Taherdoost, 2022). On the other hand, factors such as institutional uncertainty and the lack of regulatory frameworks may weaken trust in new technologies without necessarily diminishing positive perceptions of their potential benefits. This interpretation is supported by empirical research indicating that both individual cognitive processes and organizational context influence technology acceptance (Im et al., 2011; Oliveira et al., 2014). Similarly, institutional legitimacy theory emphasizes that organizations may adopt emerging technologies to align with prevailing social and institutional norms, even in the presence of perceived risks (Suddaby

et al., 2017). When these perspectives are considered together, the apparent inconsistency between low trust and positive impact perception reflects multidimensional acceptance dynamics, suggesting that blockchain's potential contribution to audit processes is supported not only by technical trust but also by perceived usefulness, organizational context, and normative expectations.

One of the key contributions of this study is that it represents one of the pioneering examinations of the blockchain–audit–stakeholder relationship in the context of Turkey. The findings also reveal a 'paradox of distrust' in the IT sector, where participants show low trust in blockchain technology but perceive its positive impact on audit processes. Furthermore, the empirical results support the need for regulatory guidance in the adoption of blockchain-based auditing practices. Highlighting these aspects emphasizes the study's originality and its contribution to both theory and practice.

To encourage the widespread use of blockchain technology, it is essential to increase research, focus on technological adoption, and provide recommendations for its application in businesses. Future studies could explore the impact of blockchain on continuous auditing in companies with advanced technological infrastructures. Specifically, firms in the IT sector that are more technologically advanced can serve as a primary sample for such studies. Further research could expand this approach to other industries in the BIST-100 index to provide a broader evaluation.

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