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Development and Validation of a Scale to Measure Blockchain Awareness and Financial Confidence in the Turkish Financial Sector

Mustafa ÖZYEŞİL[1], Havane TEMBELO[2]

ABSTRACT

This paper seeks to develop an empirically tested theoretical model that measures the block chain related awareness, confidence, and perceived relevance regarding finances among employees in the Turkish financial services sector. From the existing literature on blockchain adoption, the acceptance of fintech, and trust-based investment behavior, the authors developed an initial item pool consisting of 14 items. Content validation was done through experts followed by a pilot. Primary data was collected from 450 finance professionals working in the banking, treasury, risk, and accounting departments of different companies within Istanbul. The questionnaire was filled out by the respondents during the period March to April 2025 and was distributed online. Internal consistency was calculated using Cronbach's alpha coefficient, while the structure of the underlying scale was investigated by Principal component analysis with oblique rotation. This analysis was complemented with item analysis through corrected item-total correlations and calculation of communalities. The data quality for conducting factor analysis were validated by KMO and Bartlett's test of sphericity. From the results of the two-factor solution, the total variance explained was 85.83%. The first factor covered perceptions pertaining to blockchain awareness and informational engagement while the second predominately covered confidence in blockchains financial functionality and trustworthiness. The final structure is comprised of 14 items that have high loadings and little redundancy. The results indicate that the scale is not only clear-cut conceptually and statistically, but also provides a consistent measure for further studies regarding the perception and acceptance of technology in the finance domain.

Keywords: Blockchain Perception, Financial Confidence, Scale Development, Factor Analysis, Financial Professionals, Technology Adoption, Turkey, Likert Scale, Internal Consistency, Trust In Digital Finance.

JEL Classification Codes: C51, J21, J82

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INTRODUCTION

The past few years have shown a rapid development of blockchain technology as it evolved from a niche concept to a widely-used digital infrastructure with severe repercussions for numerous sectors – finance in particular. The potential uses of blockchain are transformative regarding digital payments, smart contracts, identity verification, and even asset tokenization due to the clear benefits of decentralization, transparency, and security. As the sector adopts these systems more and more, it becomes increasingly important to understand how professionals perceive, trust, and interact with the technology. These changes illustrate the need beyond technical or economic discourse attitude frameworks to evaluate the analysis of blockchain perceptions.

Regardless of the rapid development of applications relative to blockchain, there is a noticeable gap of research focused on human attitudes and intended behaviors with regards to blockchain's infrastructure. The majority of literature seems to revolve around adoption-related anything to do with technology or its market impacts to the adopters operating within deeply affected financial systems. Bankers, risk and investment managers, rely on emerging technologies to possess a strategic advantage. Unlike the other disciplines, they do not have access to trustworthy and validated frameworks measuring blockchain technology trust, awareness, functionality, and other relevant constructs.

In response to this gap, the current study aimed to create an assessment instrument appropriate for the context of financial specialists in Turkey. The country's developing interest in incorporating digital finance technologies and blockchain experimentation provides a rich setting for scale development. A number of statements were designed to capture the dimensions of awareness of blockchain innovations, accessibility, trust in system security, and blockchain's role in the future of financial systems. The item pool was written in Turkish and was subjected to several rounds of expert scrutiny to ensure relevance to the original concepts and clarity of the ideas presented.

1 Head of Business Administration (English) Dept., Haliç University, İstanbul, Türkiye, mustafaozyesil@halic.edu.tr

2 Ministry of Health of the Republic of Türkiye, Istanbul Provincial Health Directorate, İstanbul, Türkiye, havane.tembelo21@gmail.com

Data were collected through an online survey distributed to professionals working in finance-related units of organizations in Istanbul. The measurement instrument was evaluated through reliability analysis and exploratory factor analysis to examine its internal consistency and structural coherence. Accordingly, the study aimed to develop a contextually relevant and methodologically sound scale for investigating finance professionals' perceptions of, confidence in, and decision-making related to blockchain technology.

The remainder of the paper is organized as follows. The theoretical background and literature review establish the conceptual foundations of the study and identify the relevant measurement gap. The methodology section describes the item-development process, sample, data-collection procedure, and analytical strategy. The results section presents the reliability, descriptive, and component-analysis findings. Finally, the discussion and conclusion sections interpret the findings, outline their theoretical and practical implications, acknowledge the study's limitations, and provide directions for future research.

THEORETICAL BACKGROUND AND CONCEPTUAL FRAMEWORK

Blockchain technology has become an important component of the digital economy because it enables decentralized data storage, transparent transaction processes, and tamper-resistant record keeping (Nakamoto, 2008; Tapscott & Tapscott, 2016). Although it was originally introduced as the technological infrastructure underlying cryptocurrencies such as Bitcoin, blockchain has subsequently developed into a broader technology with applications in finance, healthcare, logistics, and public administration (Zheng et al., 2018). In financial contexts, blockchain can facilitate secure cross-border payments, self-executing agreements, real-time asset tracking, and the tokenization of financial and non-financial assets. These capabilities position blockchain as a potentially transformative infrastructure for the exchange, verification, and recording of value.

An important unresolved issue is the absence of a consistent and validated method for measuring how individuals and professionals perceive blockchain technology. Although public and professional interest in blockchain has increased substantially, levels of knowledge, trust, and perceived usefulness remain uneven across users and institutions. Even within traditional financial organizations, decision makers often lack reliable measurement instruments for assessing the beliefs and evaluations that shape the acceptance of blockchain-based systems. Previous studies have primarily examined blockchain adoption from a technological perspective, while trust, cognitive awareness, and perceived systemic utility have rarely been integrated into a unified measurement framework (Catalini & Gans, 2016; Iansiti & Lakhani, 2017). This limitation underscores the need for a context-sensitive instrument that captures these dimensions at the individual level within financial settings.

The conceptual foundation of the study draws on established behavioral theories of technology adoption and use. According to the Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are central determinants of an individual's intention to adopt a technology (Davis, 1989). Similarly, the Theory of Planned Behavior (TPB) emphasizes the roles of attitudes, subjective norms, and perceived behavioral control in shaping behavioral intentions (Ajzen, 1991). The Unified Theory of Acceptance and Use of Technology (UTAUT) extends these perspectives by incorporating factors such as performance expectancy, effort expectancy, and social influence (Venkatesh et al., 2003). Collectively, these frameworks indicate that the adoption of emerging digital technologies depends not only on their technical characteristics but also on users' perceptions, evaluations, and levels of trust.

In this study, these theoretical perspectives were operationalized through items addressing blockchain-related awareness, informational engagement, perceived financial relevance, functionality, security, and confidence. One group of items evaluates respondents' engagement with blockchain-related information and their perceptions of the technology's present and future relevance. A second group assesses blockchain's accessibility, reliability, security, risk-reduction capacity, innovative potential, and expected contribution to the financial system. The items were derived from the relevant theoretical literature and refined through expert assessment to improve their conceptual relevance and contextual clarity.

By combining theoretically informed constructs with finance-specific applications, the proposed scale seeks to provide a practical instrument for examining how finance professionals understand, evaluate, and develop confidence in blockchain technology. The resulting framework is intended to support future research on technology perception and decision-making in financial institutions, where strategic choices concerning emerging technologies are made.

LITERATURE REVIEW

Blockchain Research in Finance: From Technical Innovation to Human-Centered Evaluation

Interest in academic and professional communities regarding blockchain technology has grown significantly over the past decade. However, blockchain-related research has focused primarily on the technical aspects, architectural cryptography, and macroscopic economics. Some of the research identified blockchain technology as a new foundational technology that has the potential to disrupt and transform the entire system of transactional relations, governance, and value systems as a whole (Zheng et al., 2018, Iansiti & Lakhani, 2017). Although these studies are important for recognizing and determining the potential disruption that blockchain technology can create, they do not provide any understanding of the perceptions, trust, and evaluations that stakeholders, and more specifically, financial market experts, have concerning blockchain-based systems.

The rapid advancement of blockchain technologies and the transition from the experimental stage to the integration of real-world financial systems have necessitated a shift toward the design and implementation of major financial systems. Most recent studies have focused on the importance of the adoption of blockchain in finance and the systems that have been designed and the implications of complex systems. The majority of academic research and professional practices, dominated by the technical design and systems efficiency perspective, have disregarded the important systemic design and efficiency from the adoption of blockchain technologies in finance and remained focused on the implementations of the blockchain technologies in financial systems. Thus, the adoption of blockchain technologies necessitates a focus on the systems designed and implemented and the perceptions and trust of key decision makers.

Behavioral Technology Acceptance Models and Blockchain-Specific Limitations

Most research focused on the adoption of new technologies has relied on behavioral models such as the Technology Acceptance Model (TAM) (Davis, 1989) and the Theory of Planned Behavior (TPB) (Ajzen, 1991), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). These models have described the importance of perceived usefulness and perceived ease of use, social influence, and behavioral intention to explain the acceptance of new technologies. More recent adaptations of these models have included the constructs of trust and perceived risk, especially in relation to digital financial technologies.

While these models have been used in examining the adoption of blockchain technologies, recent empirical studies have shown that blockchain has attributes that, in some cases, are beyond the explanations of the general acceptance models. Unlike the traditional information systems, blockchain technologies are based on decentralization, immutability, consensus mechanism, and algorithmic governance. These technologies fundamentally transform trust and accountability relations in financial systems. Hence, more recent studies suggest that adoption of blockchain technologies cannot be explained using the traditional frameworks of use and performance expectations. These models have to include trust, adherence to regulations, and systemic reliability (Zhang et al., 2023; Kouhizadeh et al, 2022).

Trust, Risk, and Regulatory Context in Financial Blockchain Adoption (Recent Evidence)

Recent literature in finance and blockchain also trusts the literature as being more nuanced. Financial professionals need to balance their assessment of the blockchain as operationally efficient and in terms of compliance, data, governance, and systemic collapse. Trust in blockchain as an operationalizing construct falls along the dimensions of trust in technology, trust in the regulators, and trust in the governance surrounding the technology (Allen et al., 2022; Fang et al., 2024).

For example, Allen et al. (2022) show a strong influence of regulatory and institutional trust on the integration of blockchain systems by financial institutions, as opposed to the integration of systems on an advanced technology level. In the same manner, Fang et al. (2024) show a relationship between governance confidence and perceived risk that impacts the acceptance of blockchain in financial systems and payments. These studies highlight the need for regulatory and institutional frameworks for the adoption of blockchain in finance.

Measurement Approaches and Persistent Scale-Level Gaps

While the importance of the perceptual-trust nexus has been acknowledged, at least in part, the measurement frameworks in blockchain research continue to be heterogeneous. The Technology Readiness Index (Parasuraman, 2000) and Digital Trust Scale (McKnight et al., 2002) provide a rudimentary understanding of technology readiness and trust, respectively, but do not account for blockchain-specific features of decentralization, immutability, and the execution of governance through algorithms.

The recent empirical work has relied primarily on variations of the TAM or the UTAUT, with the inclusion of trust, innovativeness, or perceived risk, using items not originally developed for the technology in question. For instance, in the case of Mohammadi et al. (2021) and Sun et al. (2020), who analyzed blockchain adoption,

Table 1. Selected Recent Blockchain–Finance Studies and Measurement Focus (2022–2025)

Study	Context / Sample	Main Constructs Measured	Limitation Addressed by This Study
Allen et al. (2022)	Financial institutions, cross-country	Trust, regulation, adoption intention	No validated scale for professional perception
Kouhizadeh et al. (2022)	Blockchain supply chain finance	Trust, transparency, governance	Not finance-professional specific
Gan, Li & Qiao (2024)	Banking & finance employees (218 participants)	Trust in technology, trust between users, acceptance intention	Generic acceptance constructs but empirically tests trust relationships in finance
Norbu (2024)	Cross-sector blockchain users (systematic review)	Trust, acceptance, perceived risk	No blockchain-specific scale validated for finance professionals

the authors relied on previously developed constructs, whereas Zhang et al. (2023) and Kouhizadeh et al. (2022) have noted that the lack of measurement instruments that are validated and specific to blockchain technology hinders both comparability and the ability to formulate and add to a theory. This is especially important in the financial services sector, where practitioners work under more stringent regulatory and systemic rules.

Contribution of the Present Study

The present study is designed to address the literature gaps by attempting to construct and validate a measurement scale that is contextually sensitive enough to assess the level of awareness and confidence of financial professionals regarding blockchain technology. While attempting to bridge the framework gaps between behavioral theories and technology acceptance models, the study aims to incorporate information communication technology (ICT) related to the operating environments of financial systems. The scale, therefore, seeks to enhance the theory-building process. The scale is the first of its kind and aims to assess the patterns of perceptions, evaluations, and confidence of financial professionals regarding blockchain technology in the context of organizational settings.

EXPLORATORY FACTOR ANALYSIS AND SCALE DIAGNOSTICS

Dataset and Sample Structure

The dataset leveraged for this research came from a formulated survey aimed to measure people's opinions, knowledge, and confidence regarding financial blockchain systems in Turkey. The survey was electronically distributed through social media and other platforms, which helped enhance coverage.

The respondents were employed as finance professionals in different accounting and banking institutions in different parts of İstanbul. This group was limited to only those who worked in a financial decision-making capacity while intentionally excluding students to maintain the rigor of the dataset. A convenience sampling strategy was employed while data collection happened over a single month period from March 15 to April 15, 2025.

The original questionnaire included 26 construct-related items designed to capture blockchain awareness, perceived functionality, trust, usage and investment behavior, and risk perceptions. All construct-related items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Following expert assessment, pilot testing, and iterative psychometric screening, 12 items were excluded and 14 items were retained for the final reliability and component analyses. Appendix A presents the complete original 26-item pool, whereas Table 11 reports the final 14 items retained in the scale.

The analysis was conducted on the 450 responses that were complete. This number is significantly more than the optimal amounts suggested for exploratory factor analysis (EFA) set at 300 cases, and around 5-10 observations per item (MacCallum et al., 2001). This offered sufficient statistical power and reliability of the factor solution. Content validity was ensured by having field experts review the initial pool of items created by the researchers. The measurement tool was refined several times based on items' performances, analysis feedback, and psychometric insights. All procedures received approval from the Ethics Committee of Istanbul Yeni Yüzyıl University (Date of Approval: March 5, 2025; No of Approval: YYU-EK-2025/067), and as per ethical research guidelines, informed consent was collected from all participants.

METHODOLOGY

To create an accurate and credible measurement instrument evaluating the perception, trust, and awareness concerning blockchain technology in the financial industry, a quantitative research design was utilized. The methodology adhered to the procedures provided in the literature on scale development (DeVellis, 2017; Clark & Watson, 1995; Worthington & Whittaker, 2006).

The researchers created an item pool by conducting a thorough literature review: intention to adopt blockchain, trust in technology, digital finance, and behavioral finance (Ajzen, 1991; Venkatesh & Bala, 2008; Davis, 1989). The five-level Likert scale items (1 = "Strongly Disagree" and 5 = "Strongly Agree") were written in Turkish. For content validity, subject-matter experts on finance, digital technologies, and scale development were consulted who suggested to significantly alter almost all parts of the first draft.

To check the quality and structural soundness of the mesuring tool, a set of statistical analyses will be conducted. Firstly, cumulative descriptive statistics such such as mean, standard deviation, skewness and kurtosis (for distributional properties of every item) will be computed. Skewness and kurtosis would provide insight into the central tendency, variability, and normality of item responses which are meritorious for determining subsequent analyses.

Reliability will be evaluated using Cronbach's alpha coefficent. The degree of internal consistency of total scale and sub scales will be tested. Analyses will be performed to check whether items with corrected item-total correlations around .30 or those that lower alpha would be an admissible criterion for removal (Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011).

In order to analyze the hyphothetic model, Exploratory Factor Analysis will be carried out using Principal Component Analysis and factor rotation would be done using Oblimin as it allows for correlation between factors (Fabrigar et al., 1999). Suitability of the data for factor analysis will be checked using Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of Sphericity (Kaiser, 1974; Bartlett, 1954).

The options available include the factors whose eigenvalues are greater than 1.00, communalities, and the scree plot to guide their decisions about how many to retain. All factors with loadings of .40 and above on one factor will be retained and all non-dominant and cross-loaders will be removed. This will be done repeatedly until Hair and colleagues in 2019, reach a solution that is simple, easy to understand, and harmonizes with theory.

TEST RESULTS

Reliability of the Scales

To determine the internal reliability of the scale, Cronbach's alpha values were computed for each dimension as well as for the total scale. These results are summarized in Table 2.

The evaluate internal consistency, we relied on Cronbach's alpha which is a coefficient developed by Cronbach (1951) to determine how closely related a set of items are as a group (measure the same latent construct). The sub-dimensions and overall scale reliability coefficients yielded showed strong internal structure and good psychometric quality.

Table 2. Reliability of the Scales

Reliability Statistics		
Dimension	Cronbach's Alpha	N of Items
I	.981	10
II	.909	4
Overall	.923	14

Source: Author's own calculations

With 10 items, the first dimension (Dimension I) yielded Cronbach's alpha of .981, which is exceptionally high. Nunnally and Bernstein (1994) note that alpha values greater than .90 reflect an esteemed level of reliability. They also note that values greater than .95, as in this case, suggest redundancy or superficial similarity among items (Streiner, 2003). This single figure affirms internal consistency to a striking degree; however, it is prudent to suspect item overlap or duplication if frugality is a design

Table 3: Item Contribution to Scale Reliability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
m1	32.51	25.747	.225	.930
m4	34.29	22.109	.886	.910
m5	34.34	23.899	.808	.915
m6	34.29	23.557	.739	.916
m7	34.34	23.860	.832	.915
m9	34.32	23.295	.874	.912
m10	34.27	21.807	.848	.910
m11	34.30	23.092	.762	.914
m13	32.52	23.426	.378	.935
m14	32.56	23.481	.578	.921
m15	34.31	23.025	.820	.913
m19	32.63	24.368	.357	.930
m20	34.33	24.149	.698	.918
m21	34.29	21.970	.883	.909

Note: Item codes (m1–m21) refer to individual questionnaire statements reported in Appendix A.

criterion for the instrument. In my analysis, the second dimension (Dimension II) consists of 4 items and produced a Cronbach's alpha of .909, which also signifies strong reliability. Given that alpha is sensitive to the number of items—where shorter scales often result in lower coefficients (Cortina, 1993)—this value suggests that the subscale is robust with a strong degree of inter-item consistency. Still, it indicates that the items are framed with a high degree of measurement accuracy even when few items are employed.

The scale's Cronbach's alpha was .923 across the 14 items, which further confirmed the internal consistency of the instrument. This figure is consistent with widely accepted criteria for high reliability and implies that the scale can provide reliable results over repeated measurements (Tavakol & Dennick, 2011). Combining the results from these analyses suggests that the instrument has adequate psychometric quality, thus making it feasible to apply more complex statistical methods such as exploratory or confirmatory factor analyses, regression analyses, or structural equation modeling. Additionally, the alignment of the hypothesized subscales with the overarching framework evidences the soundness of measurement model, especially construct validity, and in particular cross validity.

To evaluate the internal consistency at the item level, the corrected item-total correlations along with Cronbach's alpha for the remaining items were computed. The results are shown in Table 3.

The figures in Table 3 show that item-total correlations range between .225 and .886, meaning that the overwhelming majority of items demonstrated strong correlations with the total score on the scale. A few items, in particular, had very high item-total correlations (e.g., m4 = .886; m21 = .883; m9 = .874), which indicates that internal scale consistency is strong. A few items had lower item-total correlations in comparison to others (e.g., m1 = .225; m13 = .378; m19 = .357) while still maintaining values above the accepted minimum, meaning that no deficiencies in the activities were suggested. The statistics range of the 'Cronbach's alpha if item deleted' was between .909 and .935 suggesting that no item was singled to have an abnormal dominative effect on the overall reliability of the scale. The solid internal consistency across the scale was therefore taken from the item-level results rather than as parameters that would justify the removal of items from the scale.

Descriptive Statistics Analysis

Prior to conducting further statistical analyses, descriptive statistics were calculated to assess the basic characteristics of each item, such as central tendency, variability, and distributional shape. These results are summarized in Table 4.

To examine the distributional traits and central tendencies data computed descriptive statistics, including central tendency (mean), dispersion (standard deviation and variance), and shape (skewness and kurtosis). These results listed in Table 4 are vital for evaluating the scale's psychometric adequacy and the upper bound of multivariate analysis (Tabachnick & Fidell, 2019; Field, 2018).

450 respondents completed all items, resulting in full data availability (N=450). The mean scores of the items differed significantly which indicates different response strategies. m1 (M = 3.90), m13 (M = 3.89), m14 (M = 3.85), and m19 (M = 3.78) were the highest scoring items and they were tended to agree or endorse the items. On the other hand, m7 (M = 2.06), m5 (M = 2.07) and m20 (M = 2.08) were rated lower on average which suggests disagreement or less relevance.

The standard deviations (SD) ranged from .369 (m7) to .800 (m13), suggesting different levels of response divergence. Items with relatively low SDs like m5, m7, and m20 tend to show greater agreement among the respondents while higher SDs e.g. m13 and m14 may suggest greater lack of agreement in perceptions or interpretations (DeVellis, 2017). With regards to symmetry of distribution, skewness and kurtosis values were associated with notable asymmetries and peakedness in many items. Responses to items like m5 (Skewnes = 5.118), m7 (5.302), and m15 (4.893) suggest the presence of high positive skewness which means that respondents tend to give less than average high endorsements, while ailing to give high endorsements. Austerity tends to be mildly subdued in m1 (-3.659), m13 (-1.293), and m19 (-2.448) suggesting that these respondents concentrate their responses towards the higher end of the scale. These features of the distributions should be taken into account when selecting relevant statistical methods since dependance on non- normality might compromise the strength of the results from parametric testing (Kline, 2015).

The kurtosis values support the case of non-normality and is in fact more pronounced than bias. Extreme sharpness, which denotes heavy-tailed responses around the mean, was seen on m7 (Kurtosis = 28.49), m5 (26.71), and m15 (23.20) indicating strong leptokurtic tendencies. It is likely that the responses for these items were homogeneously clustered and therefore, perceptions were homogeneous across respondents. Moderated levels of kurtosis were observed on m13 (Kurtosis= 1.53) and m19 (4.13) which implies more balanced response distributions when compared to the former items.

The descriptive results highlight both the asymmetry and heterogeneity of responses to the items illustrating how items differ within the scale. For instance, items were tested for their readiness to undergo exploratory or confirmatory factor analysis which greatly relies on normality, homogenous variance, and item discrimination (Fabrigar et al, 1999; Worthington & Whittaker, 2006).

Table 4. Descriptive Statistics Results

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
m1	450	4	1	5	1754	3.90	.456	.208	-3.659	.115	19.185	.230
m4	450	3	2	5	952	2.12	.550	.303	4.726	.115	21.001	.230
m5	450	4	1	5	931	2.07	.374	.140	5.118	.115	26.707	.230
m6	450	4	1	5	951	2.11	.451	.203	3.697	.115	13.894	.230
m7	450	4	1	5	929	2.06	.369	.136	5.302	.115	28.490	.230
m9	450	3	2	5	940	2.09	.418	.175	4.619	.115	20.099	.230
m10	450	3	2	5	960	2.13	.608	.370	4.464	.115	18.198	.230
m11	450	3	2	5	949	2.11	.499	.249	4.653	.115	20.943	.230
m13	450	3	2	5	1751	3.89	.800	.641	-1.293	.115	1.529	.230
m14	450	3	2	5	1732	3.85	.570	.325	-2.255	.115	5.447	.230
m15	450	3	2	5	944	2.10	.476	.226	4.893	.115	23.199	.230
m19	450	3	2	5	1701	3.78	.632	.399	-2.448	.115	4.135	.230
m20	450	2	2	4	936	2.08	.392	.154	4.711	.115	20.280	.230
m21	450	3	2	5	953	2.12	.568	.322	4.706	.115	20.550	.230
Valid N (listwise)	450											

Source: Author's own calculations

Correlation Matrix

The correlation structure among the items was examined using a Pearson correlation matrix, which offers insights into the internal coherence and potential redundancy within the scale. Results are shown in Table 5 as follows:

To measure the level of linear relationship between the variables, a bivariate Pearson correlation analysis was performed. Based on the correlation matrix included in Table 5, one can appreciate the internal architecture of the scale alongside how its diverse elements are integrated conceptually (Field, 2018; Tabachnick & Fidell, 2019).

Almost all inter-item correlations were verified statistically to be meaningful at the 0.01 level (1-tailed). This suggests that a marked level of shared variance exists among the items. Moreover, the highest positive correlations were noted for the following pairs: m4–m9 (r = .982), m4–m21 (r = .990), m9–m10 (r = .987), m10–m21 (r = .980). These results indicate that these items are possibly measuring an underlying construct with high inter-item conceptual overlap. Of course, such high positive correlations can provide evidence of strong internal consistency (Nunnally & Bernstein, 1994); however, they may suggest redundancy in the event that the values approach or exceed .90 (Streiner, 2003). This argument becomes particularly important when considering scale efficiency and possible multicollinearity in multivariate analyses. Moderate to high correlations (around r = .70… .89) were registered between m5 and m6, m7, m11, and m14 and m19, implying that there might be developed coherent subdimensions or item clusters within the over scale. On the contrary, a few item pairs exhibited weak or even negative correlations, such as m1 and m6 (r = –.149)

Table 5. Correlation Matrix

		m1	m4	m5	m6	m7	m9	m10	m11	m13	m14	m15	m19	m20	m21
Correlation	m1	1.000	-.015	.041	-.149	.066	-.034	-.063	-.059	.623	.549	-.046	.664	.170	-.031
	m4	-.015	1.000	.891	.899	.906	.982	.979	.895	.145	.319	.935	.080	.741	.990
	m5	.041	.891	1.000	.799	.984	.844	.821	.712	.211	.300	.725	.055	.751	.874
	m6	-.149	.899	.799	1.000	.800	.916	.896	.886	-.034	.180	.893	-.076	.603	.896
	m7	.066	.906	.984	.800	1.000	.858	.825	.712	.243	.322	.738	.090	.764	.889
	m9	-.034	.982	.844	.916	.858	1.000	.987	.936	.102	.290	.975	.083	.663	.979
	m10	-.063	.979	.821	.896	.825	.987	1.000	.936	.085	.290	.971	.059	.683	.980
	m11	-.059	.895	.712	.886	.712	.936	.936	1.000	.002	.199	.950	.027	.547	.898
	m13	.623	.145	.211	-.034	.243	.102	.085	.002	1.000	.819	.057	.838	.283	.146
	m14	.549	.319	.300	.180	.322	.290	.290	.199	.819	1.000	.268	.910	.313	.324
	m15	-.046	.935	.725	.893	.738	.975	.971	.950	.057	.268	1.000	.094	.578	.946
	m19	.664	.080	.055	-.076	.090	.083	.059	.027	.838	.910	.094	1.000	.071	.091
	m20	.170	.741	.751	.603	.764	.663	.683	.547	.283	.313	.578	.071	1.000	.737
	m21	-.031	.990	.874	.896	.889	.979	.980	.898	.146	.324	.946	.091	.737	1.000
Sig. (1-tailed)	m1		.376	.191	.001	.082	.236	.090	.107	.000	.000	.164	.000	.000	.257
	m4	.376		.000	.000	.000	.000	.000	.000	.001	.000	.000	.046	.000	.000
	m5	.191	.000		.000	.000	.000	.000	.000	.000	.000	.000	.123	.000	.000
	m6	.001	.000	.000		.000	.000	.000	.000	.238	.000	.000	.053	.000	.000
	m7	.082	.000	.000	.000		.000	.000	.000	.000	.000	.000	.029	.000	.000
	m9	.236	.000	.000	.000	.000		.000	.000	.015	.000	.000	.040	.000	.000
	m10	.090	.000	.000	.000	.000	.000		.000	.036	.000	.000	.105	.000	.000
	m11	.107	.000	.000	.000	.000	.000	.000		.484	.000	.000	.286	.000	.000
	m13	.000	.001	.000	.238	.000	.015	.036	.484		.000	.113	.000	.000	.001
	m14	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	m15	.164	.000	.000	.000	.000	.000	.000	.000	.113	.000		.023	.000	.000
	m19	.000	.046	.123	.053	.029	.040	.105	.286	.000	.000	.023		.066	.027
	m20	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.066		.000
	m21	.257	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.027	.000	

a. Determinant = 1,040E-15

Source: Author's own calculations

and m1 and m10 (r = –.063). Importantly, m1 showed low or inverse correlations with the majority of other items, which raises the question of whether this item integrates adequately into the overall structure and the hypothesized composite constructs (DeVellis, 2017).

The determinant of the reported 1.040 * 10^-15 correlational matrix value within the limit of .00001 indicates the possibility of multicollinearity or near-singularity (Kaiser, 1974; Hair et al., 2019). This suggests that some items are likely to be very linearly dependent and their inclusion together in most analyses, specifically EFA or SEM, may lead to unstable outcomes in factor extraction or estimation processes. Apart from psychometric considerations, a high degree of inter-item correlation affirms reliability; however, too much linear dependence can inflate error variance and impede construct differentiation (Fabrigar et al. 1999; Worthington & Whittaker, 2006). Thus, prior to additional modeling work, a more refined strategy of item reduction or regularization methods like ridge regression or principal axis factoring should be considered.

Factor Analysis

A factor analytic approach was employed to determine whether the observed variables could be grouped into interpretable constructs reflecting the scale's theoretical framework.

Table 6 presents the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity. The KMO value was .792, indicating an acceptable level of common variance among the retained items and supporting the suitability of the dataset for component analysis. Bartlett's test of sphericity was statistically significant, $\chi^2(91) = 15{,}300.600$, $p < .001$. The null hypothesis that the correlation matrix is an identity matrix was therefore rejected, demonstrating that the correlations among the items were collectively sufficient for component extraction (Bartlett, 1954; Hair et al., 2019). Taken together, the KMO and Bartlett results supported the use of component analysis for the final 14-item set.

Table 6. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.792
Bartlett's Test of Sphericity	Approx. Chi-Square	15300.600
	Df	91
	Sig.	.000

Source: Author's own calculations

The proportion of variance in each observed item explained by the retained components was subsequently evaluated through the extraction communalities reported in Table 7.

Table 7. Communalities

	Initial	Extraction
m1	1.000	.631
m4	1.000	.986
m5	1.000	.814
m6	1.000	.885
m7	1.000	.834
m9	1.000	.973
m10	1.000	.961
m11	1.000	.848
m13	1.000	.860
m14	1.000	.872
m15	1.000	.889
m19	1.000	.897
m20	1.000	.587
m21	1.000	.981

Source: Author's own calculations

Extraction communalities were examined to determine the proportion of variance in each retained item accounted for by the two-component solution. Because Principal Component Analysis was used, the initial communality of each item was set to 1.000, representing the total observed variance prior to extraction. As shown in Table 7, extraction communalities ranged from .587 to .986. Thus, the retained components explained between 58.7% and 98.6% of the variance in the individual items.

The highest communalities were observed for m4 (.986), m21 (.981), m9 (.973), and m10 (.961), indicating that these items were strongly represented by the extracted component structure. The comparatively lower communalities of m20 (.587) and m1 (.631) indicate that a larger proportion of their variance remained unexplained. Nevertheless, both values exceeded the commonly applied minimum guideline of .50 (MacCallum et al., 2001), supporting their provisional retention. The performance of these items should still be reassessed in subsequent confirmatory studies.

Overall, the communality results indicate that the two-component solution accounted for a substantial proportion of the variance in most retained items. The

Table 8. Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.824	63.030	63.030	8.824	63.030	63.030	8.794
2	3.192	22.800	85.830	3.192	22.800	85.830	3.395
3	.785	5.610	91.440				
4	.479	3.422	94.863				
5	.289	2.061	96.924				
6	.158	1.129	98.053				
7	.128	.912	98.965				
8	.062	.445	99.409				
9	.040	.288	99.697				
10	.018	.126	99.823				
11	.013	.091	99.914				
12	.007	.049	99.963				
13	.004	.029	99.992				
14	.001	.008	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Source: Author's own calculations

total variance explained by the extracted components is presented in Table 8.

The number of components to be retained was evaluated using eigenvalues, the cumulative proportion of variance explained, the scree plot, and the conceptual interpretability of the solution. As shown in Table 8, the first component had an eigenvalue of 8.824 and explained 63.03% of the total variance. The second component had an eigenvalue of 3.192 and explained an additional 22.80%. Together, the two components accounted for 85.83% of the total variance.

The third component had an eigenvalue of .785 and explained only 5.61% of the variance, while all subsequent components made progressively smaller contributions. Accordingly, only the first two components satisfied the eigenvalue-greater-than-one criterion. The scree plot also supported a two-component structure. A two-component solution was therefore retained on the basis of statistical evidence and conceptual interpretability. Because an oblique rotation was employed and the components were permitted to correlate, the rotated sums of squared loadings should not be interpreted as additive component-specific percentages of total variance.

Following the retention of the two-component solution, Oblimin rotation with Kaiser normalization was applied to improve the interpretability of the component structure while allowing the extracted components to correlate. Oblique rotation methods are appropriate when theoretically related latent dimensions are expected to

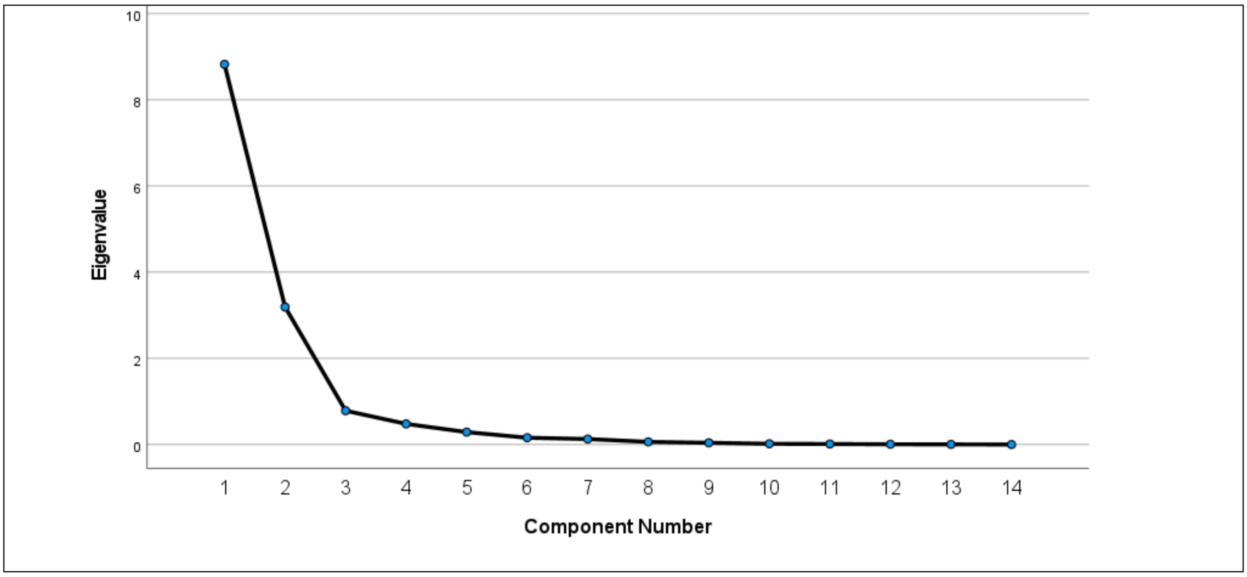

Figure 1: Scree Plot

exhibit some degree of association (Fabrigar et al., 1999; Tabachnick & Fidell, 2019; Worthington & Whittaker, 2006). The resulting pattern matrix presents the unique relationship between each retained item and its primary component while accounting for its association with the other component. The pattern matrix for the final 14-item scale is presented in Table 9.

Table 9. Pattern Matrixa

	Component	
	1	2
m4	.991	
m21	.988	
m9	.988	
m10	.984	
m15	.947	
m6	.946	
m11	.927	
m7	.896	
m5	.892	
m20	.728	
m19		,951
m13		,924
m14		,888
m1		,799

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Source: Author's own calculations

As shown in Table 9, m4, m21, m9, m10, m15, m6, m11, m7, m5, and m20 loaded primarily on Component 1, with coefficients ranging from .728 to .991. Items m19, m13, m14, and m1 loaded primarily on Component 2, with coefficients ranging from .799 to .951. All reported primary loadings substantially exceeded the commonly applied minimum guideline of .40 for meaningful item retention (Hair et al., 2019). In addition, no material cross-loadings were reported in the pattern matrix, supporting the interpretability of the two-component structure.

The particularly high loadings observed for m4 (.991), m21 (.988), and m9 (.988) indicate that these items are strongly represented by Component 1. Although high primary loadings facilitate component interpretation, values approaching 1.00 should be interpreted cautiously because they may also indicate substantial conceptual similarity or redundancy among some items (Costello & Osborne, 2005). Accordingly, these items should be reassessed in subsequent confirmatory and item-refinement studies rather than being interpreted as independently establishing the validity of the component.

The Oblimin rotation converged after three iterations. This computational convergence indicates that the specified rotation procedure reached a numerical solution; however, convergence alone does not demonstrate the stability or validity of the component structure, which should be evaluated using additional psychometric evidence and independent samples (Field, 2018). Because oblique rotation permits the extracted components to correlate, the relationship between the two components was subsequently examined using the Component Correlation Matrix presented in Table 10 (Fabrigar et al., 1999; Tabachnick & Fidell, 2019; Worthington & Whittaker, 2006).

Relationships among the components were evaluated through the Component Correlation Matrix using Principal Component Analysis (PCA) with oblique rotation (Oblimin with Kaiser Normalization). Unlike orthogonal rotations which do not allow for interrelated components, oblique rotations take into consideration that some latent variables may be correlated. This difference is more aligned with the reality of complex psychological and social factors (Costello & Osborne, 2005; Tabachnick & Fidell, 2019).

Table 10. Component Correlation Matrix

Matrix

Component	1	2
1	1.000	.117
2	.117	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Source: Author's own calculations

In the current matrix, the correlation coefficient between Component 1 and Component 2 was .117 which indicates a slight positive correlation between the two extracted factors. Even though the components are relatively distinct, this slight correlation implies that the components may not be completely independent and may instead suggest some degree of interdependence that, while conceptually distinct, is nevertheless intertwined within the construct being measured (Fabrigar et al., 1999).

The strength of this correlation is not considered problematic regarding multicollinearity or factor overlap; concerns about these issues usually begin at .32 or above when evaluating factor discriminability (Worthington & Whittaker, 2006). Therefore, the correlation presented in this case justifies support for an oblique rotation approach that, in this case, appears to provide a useful and meaningful structure without excessive redundancy among components.

Moreover, the existence of even the weakest positive correlation strengthens the choice of using an oblique rotation over orthogonal options like Varimax, which could have masked intricate relationships between components (Hair et al., 2019). The structure is both reasonably sound and conceptually intact, which suggests the factor solution is also preserved and corresponds correctly to the given theory.

After the deletion of items with low face values or poor psychometric traits, the last iteration of the scale consisted of the remaining items presented below.

Based on the findings from exploratory factor analysis, the selected items were placed into two separate dimensions relative to their factor loadings and theoretical rationale. The first dimension encompasses items m19, m13, m14, and m1, all commenting on participants' levels of observing and perceptual engagement with blockchain technology. The second dimension consists of items m4, m21, m9, m10, m15, m6, m7, m11, m5, m20, which are largely related to perceptions of the functional, trust, and systemic financial features of blockchain technology.

The developed structure of the scale captures two distinct yet interconnected concepts within the results of exploratory factor analysis. Each factor captures one of the components regarding people's attitudes and perceptions about the integration of technology and finance on blockchain.

This captures respondents' self-reported levels of in-depth knowledge and generalized levels of awareness about blockchain technology. The activities encapsulated in this construct serve to evaluate whether people monitor the changes happening in blockchain and what role—according to various media platforms—they expect it to play in the future economy as a guiding industry. It captures a type of orientation within informational engagements associated with blockchain on a perceived relevance primary basis grounded in information.

BLOCKCHAIN FINANCIAL FUNCTIONALITY AND CONFIDENCE

This dimension captures the participants' evaluation of blockchain's financial functionality, fiscal security and sensitivity, its holistic scope, and financial system implications. Participant evaluations reflect the trust placed in the financial technology ecosystem and the belief towards risk, innovation, and innovation on-blade-guard financial technologies. Most significant, they participate in active analysis – either technical or fundamental – over the market. The factor represents a confidence-relating approach and pragmatic point of view towards the value blockchain delivers operationally in finance.

These dimensions address the gaps between the awareness and trust, providing an explanation of information and perception dichotomy toward behavioral interpretation and attitude measurement of the blockchain adoption.

DISCUSSION

This study developed a scale to examine how finance professionals perceive blockchain technology. Starting from an initial pool of 26 items, the item-screening process resulted in a final 14-item scale with two interpretable components. The first component, Blockchain Financial Functionality and Confidence, reflects perceptions of

Table 11: Final Set of Items Retained in the Scale after Item Elimination

Item No	Item Statement
m1	Blockchain technology reduces costs in financial transactions.
m4	Blockchain-based financial applications are easily accessible to everyone.
m5	Understanding the fundamental functioning of blockchain technology is straightforward.
m6	I have a high level of trust in transactions based on blockchain technology.
m7	Blockchain-based financial systems ensure data security.
m9	Blockchain applications reduce risks during financial transactions.
m10	Blockchain technology is expected to play a significant role in the future of Turkey's financial system.
m11	Blockchain is anticipated to support the development of innovative financial products in Turkey.
m13	I regularly follow news related to blockchain.
m14	Blockchain is expected to have a prominent place in the future of the financial system.
m15	Blockchain infrastructure is perceived as a reliable system.
m19	Comments on social media influence my decisions when investing in blockchain.
m20	I use technical or fundamental analysis methods when making blockchain-related investment decisions.
m21	I believe blockchain technology will create a major transformation in the financial sector.

blockchain's usefulness, security, reliability, accessibility, risk-reduction potential, and future role in finance. The second component, Blockchain Informational Engagement and Perceived Financial Relevance, captures engagement with blockchain-related information and perceptions of its importance for financial decision-making.

The emergence of these two components suggests that being informed about blockchain is not the same as having confidence in its practical use. A finance professional may closely follow blockchain developments and recognize their future importance while remaining uncertain about security, reliability, or institutional applicability. The weak positive correlation between the two components, at .117, supports this distinction and indicates that they represent related but largely separate aspects of blockchain perception.

This result is consistent with technology-acceptance research showing that awareness, perceived usefulness, trust, and confidence may influence adoption through different pathways. Established models emphasize the importance of perceived usefulness, ease of use, and performance expectations in shaping technology-related behavior (Venkatesh et al., 2003). Similarly, digital-trust research indicates that familiarity with a technology does not automatically create confidence in its reliability or institutional safeguards (McKnight et al., 2002).

The two-component solution explained 85.83% of the total variance, indicating that the retained items captured a substantial proportion of the information represented in the scale. This level is higher than the cumulative variance reported in some related technology-adoption studies (Mohammadi et al., 2021; Sun et al., 2020). However, such comparisons should be interpreted cautiously because the studies differ in sample characteristics, measurement instruments, and analytical procedures.

The reliability results were also strong. Cronbach's alpha was .981 for the first component, .909 for the second component, and .923 for the overall scale. Nevertheless, the exceptionally high alpha of the first component and several inter-item correlations approaching or exceeding .90 may indicate overlap among some items. The very low determinant of the correlation matrix supports this concern. Therefore, the findings provide preliminary evidence of internal consistency, but additional item-refinement studies are needed to determine whether a shorter version can reduce redundancy without weakening conceptual coverage.

The performance of m1 should also be interpreted carefully. Its corrected item-total correlation of .225 was below the conventional .30 guideline. However, the item was retained because it had an acceptable communality, a substantial component loading, theoretical relevance, and only a limited effect on overall reliability. Its performance should nevertheless be reassessed in an independent sample.

From a theoretical perspective, the study contributes to the literature by distinguishing between confidence in blockchain's financial functionality and engagement with information concerning its financial relevance. The component labels were based on both the empirical loading patterns and the conceptual content of the items, consistent with the principle that scale dimensions should be statistically supported and theoretically meaningful (DeVellis, 2017).

From a practical perspective, the scale may help financial institutions identify whether hesitation toward blockchain arises from limited knowledge or from concerns about security, reliability, and practical usefulness. These different barriers require different organizational responses, such as professional training, clearer internal communication, pilot applications, and stronger governance and security arrangements.

CONCLUSION

Blockchain technology is no longer viewed solely as the infrastructure behind cryptocurrencies. It is increasingly being considered a broader financial technology with potential applications in payments, transaction verification, asset management, data security, smart contracts, and financial innovation. However, the successful integration of blockchain into financial services depends on more than technical capacity. It also depends on whether the professionals expected to evaluate, implement, and use these systems understand the technology, consider it relevant to their work, and have confidence in its reliability and practical value.

This study was conducted to address that human dimension of blockchain adoption. More specifically, it sought to develop a measurement instrument that could capture how finance professionals perceive blockchain, how closely they follow developments related to it, and how much confidence they place in its financial functionality. The study began with an initial pool of 26 construct-related items derived from the literature on blockchain adoption, technology acceptance, digital trust, financial technology, and investment behavior. Following expert review, pilot testing, and iterative psychometric assessment, 12 items were removed and 14 items were retained in the final scale.

The empirical analysis was based on 450 complete responses collected from professionals working in banking, accounting, treasury, risk management, investment, and related financial functions in Istanbul. The findings showed that the data were suitable for component analysis. The Kaiser-Meyer-Olkin value was .792, while Bartlett's test of sphericity was statistically significant. Principal Component Analysis with Oblimin rotation produced a two-component structure that explained 85.83% of the total variance. Taken together, these results indicate that the retained items reflect two meaningful and interpretable aspects of blockchain perception in the financial sector.

The first component, Blockchain Financial Functionality and Confidence, consisted of 10 items. These items reflected respondents' views regarding the accessibility and comprehensibility of blockchain-based financial applications, the reliability and security of blockchain transactions, the technology's ability to reduce financial risks, its contribution to innovation, and its possible future role in the financial system. In practical terms, this dimension captures whether finance professionals see blockchain as a technology that can actually work within real financial environments. It therefore goes beyond simple awareness and focuses on whether the technology is regarded as useful, secure, reliable, and applicable.

The second component, Blockchain Informational Engagement and Perceived Financial Relevance, included four items. These items reflected the extent to which respondents followed blockchain-related news, considered the technology important for the future of finance, and were influenced by information obtained through social media and similar channels. This dimension suggests that professionals' perceptions of blockchain are also shaped by the information environments in which the technology is discussed. Following blockchain developments and recognizing their financial relevance may increase awareness, but this does not necessarily mean that an individual will also have confidence in the technology's operational performance.

The weak positive correlation between the two components supports this distinction. Informational engagement and perceived financial relevance were related to functional confidence only to a limited extent. In other words, a professional may closely follow blockchain-related developments and believe that the technology will become important without necessarily trusting its current security, reliability, or practical usability. Conversely, another professional may recognize its operational potential without regularly engaging with blockchain-related news or public discussion. This distinction is useful because it shows that blockchain perceptions in finance are not one-dimensional.

The reliability findings were generally strong. Cronbach's alpha was .981 for the first component, .909 for the second component, and .923 for the overall 14-item scale. These values demonstrate a high degree of internal consistency among the retained items. Nevertheless, particularly high reliability coefficients should not automatically be interpreted as evidence of an ideal scale. The alpha value of .981 for the first component, together with several inter-item correlations approaching or exceeding .90, suggests that some items may be very similar in wording or meaning. Therefore, although the findings support the internal consistency of the scale, they also indicate the need for further item refinement.

The study contributes to the literature by separating finance professionals' blockchain perceptions into two related but distinct areas. The first concerns confidence in blockchain's financial functionality, reliability, and practical value. The second concerns informational engagement and the perceived relevance of blockchain to the future of finance. This distinction adds a more context-specific perspective to general technology-acceptance approaches. Models such as TAM and UTAUT emphasize perceived usefulness, performance expectations, social influence, and ease of use (Davis, 1989; Venkatesh et al., 2003). The present study suggests that, in the case of blockchain, these considerations should also be evaluated alongside trust, security, informational exposure, and perceptions of institutional and financial relevance.

The scale may also have practical value for financial institutions. Organizations considering blockchain-based systems need to understand why employees and decision makers may support, question, or resist the technology. A lack of confidence may arise from concerns about security, reliability, regulation, or operational effectiveness. By contrast, limited interest may result from insufficient awareness or weak engagement with blockchain-related information. Distinguishing between these issues can help institutions design more targeted training programs, internal communication strategies, pilot projects, and technology-readiness assessments.

At the same time, the findings should be interpreted with appropriate caution. The same sample was used both to reduce the original item pool and to evaluate the resulting component structure. The final 14-item scale has therefore not yet been confirmed using an independent sample. The participants were also recruited through convenience sampling and were located in Istanbul, which limits the extent to which the results can be generalized to other regions, countries, occupational groups, and institutional settings. In addition, the corrected item-total correlation of m1 was below the commonly accepted .30 threshold. Although the item was retained because of its theoretical relevance, acceptable communality, substantial component loading, and limited effect on overall reliability, its performance should be examined again in future research.

Further studies should test the proposed structure through confirmatory factor analysis using independent and more diverse samples. Convergent and discriminant validity should be evaluated by comparing the scale with established measures of technology acceptance, digital trust, perceived risk, innovativeness, and adoption intention. Test-retest analysis would also help determine whether responses remain stable over time. Cross-sectoral and cross-cultural studies could clarify whether the scale performs similarly in different financial and institutional environments. Future item-reduction analyses should also examine whether a shorter version of the first component can reduce redundancy while preserving its conceptual coverage.

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Appendix A. Original Questionnaire Items Used in the Empirical Analysis

QUESTIONNAIRE	
You are kindly invited to take part in the study entitled "Perceptions, Trust, and Perceived Ease of Use of Blockchain Technology: A Study on the Turkish Financial Sector." Participation in this study is entirely voluntary. For the validity and reliability of the research, it is important that all questions are answered. Please indicate the option that best reflects your opinion for each statement by selecting one of the following response categories: (1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree Thank you for your valuable contribution to this study.	
Do you agree to participate in this study?	
	Yes
	No
1.	Gender
	Female
	Male
2	Age
	20-29
	30-39
	40-49
	50-59
	60 and above
3	Marital Status
	Married
	Single
4	Educational Level
	Bachelor's Degree
	Master's Degree
	Doctoral Degree (PhD)
5	Occupation
	……….
6	Monthly Income Level
	25.000-30.000
	31.000-35.000
	36.000-45.000
	46.000-50.000
	51.000-60.000
	61.000 and above
7	Have you heard of blockchain technology before?
	Yes
	No
8	I know what a smart contract is.
	Yes
	No
9	Level of knowledge regarding blockchain technology
	Very Poor
	Poor
	Good
	Very Good
	Excellent
10	Have you or your organization ever explored or implemented blockchain-based solutions?
	Yes
	No
11	If you do not use blockchain-based solutions, what is the main reason for not using them?
	Lack of awareness
	Security concerns
	Lack of access to technology
	Other
12	Which measures could encourage greater adoption of this technology?
	Awareness
	Appropriate training
	User-friendly interfaces
	Regulatory frameworks
	Other

	Blockchain	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
m1	Blockchain technology reduces costs in financial transactions					
m2	Blockchain-based applications increase the speed of financial transactions.					
m3	Blockchain technology ensures transparency in financial transactions.					
m4	Blockchain-based financial applications are easily accessible to everyone.					
m5	Understanding the fundamental functioning of blockchain technology is straightforward.					
m6	I have a high level of trust in transactions based on blockchain technology.					
m7	Blockchain-based financial systems ensure data security.					
m8	Blockchain technology provides an effective alternative to traditional financial systems.					
m9	Blockchain applications reduce risks during financial transactions.					
m10	Blockchain technology is expected to play a significant role in the future of Turkey's financial system.					
m11	Blockchain is anticipated to support the development of innovative financial products in Turkey.					
	BLOCKCHAIN AWARENESS AND PERCEPTIONS	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
m12	I know what blockchain technology is.					
m13	I regularly follow news related to blockchain.					
m14	Blockchain is expected to have a prominent place in the future of the financial system.					
m15	Blockchain infrastructure is perceived as a reliable system.					
m16	The absence of oversight by a central authority in blockchain transactions is concerning.					
	BLOCKCHAIN USE AND INVESTMENT BEHAVIOR	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
m17	I use blockchain-based cryptocurrencies as an investment instrument.					
m18	I have used blockchain-based payment systems (e.g., Bitcoin, Ethereum).					
m19	Comments on social media influence my decisions when investing in blockchain.					
m20	I use technical or fundamental analysis methods when making blockchain-related investment decisions.					
m21	I believe blockchain technology will create a major transformation in the financial sector.					
	BLOCKCHAIN RISK PERCEPTIONS	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
m22	Blockchain investments involve a high level of risk.					
m23	The high volatility of blockchain-based assets is concerning.					
m24	Blockchain systems are not reliable because they are vulnerable to cyberattacks.					
m25	Blockchain technology is vulnerable to financial fraud.					
m26	I believe that blockchain should be more heavily regulated by governments in the coming years.					