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Blockchain Governance Models for Enhancing E-Commerce User Satisfaction

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ABSTRACT

Blockchain technology has emerged as a transformative innovation in various sectors, including e-commerce. Effective blockchain governance plays a pivotal role in enhancing user satisfaction by ensuring security, transparency, and efficiency in online transactions. However, despite its growing adoption, many e-commerce platforms face challenges in implementing governance models that fully address user expectations and technological complexities, revealing a significant **gap** in the literature. This study investigates the impact of blockchain governance models on e-commerce user satisfaction, with a specific focus on mediating variables such as data privacy and system trust, and moderating variables such as user technology readiness. The study employs the Structural Equation Modeling (SEM) **method** using SmartPLS software to analyze relationships between variables. Data was collected through a survey of 135 respondents, consisting of e-commerce users familiar with blockchain technology. The **Result** reveals that blockchain governance significantly impacts data privacy and system trust, which, in turn, influence perceived ease of use and user satisfaction. Additionally, user technology readiness moderates the relationship between blockchain governance and perceived ease of use, highlighting its importance in adoption. The **Novelty** of this study lies in its integration of governance frameworks with mediating and moderating variables to holistically address e-commerce user satisfaction, an area underexplored in prior research. The **conclusion** emphasizes the need for e-commerce platforms to adopt robust blockchain governance frameworks to improve user satisfaction and gain a competitive advantage. This study **contributes** to the literature on blockchain applications in e-commerce and provides practical recommendations for enhancing governance and user experience.

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1. INTRODUCTION

The rapid advancement of blockchain technology has significantly transformed the landscape of various industries, with e-commerce being one of its primary beneficiaries [1]. By introducing decentralized, secure, and transparent systems, blockchain has the potential to redefine how transactions are conducted and data is managed [2]. Within e-commerce, blockchain governance has emerged as a critical aspect in ensuring

that platforms maintain trust, data security, and overall user satisfaction. As users increasingly demand more secure and seamless online shopping experiences, the importance of robust governance frameworks becomes paramount.

Despite the growing interest and adoption of blockchain in e-commerce, many platforms face challenges in effectively implementing governance models that align with user expectations and technological advancements. Previous research predominantly focused on the technical and infrastructural aspects of blockchain, leaving a GAP in understanding the direct impact of governance mechanisms on user satisfaction. Addressing this gap is crucial, as effective governance models are not only central to enhancing data security and trust but also play a vital role in shaping user perceptions and engagement [3].

This study investigates the influence of blockchain governance models on e-commerce user satisfaction by incorporating mediating variables such as data privacy and system trust and moderating factors like user technology readiness. Through the use of the Structural Equation Modeling (SEM) method with SmartPLS, this research provides an in-depth analysis of the relationships among these variables. The findings aim to contribute both theoretically and practically to the field of blockchain governance in e-commerce [4].

The remainder of this paper is structured as follows: the next section presents a comprehensive literature review, followed by the research methodology and data analysis approach. Subsequently, the results and discussions are provided to interpret the findings, and finally, the conclusion highlights key takeaways and practical implications of the study [5].

2. LITERATURE REVIEW

2.1. Blockchain Technology in E-Commerce

Blockchain technology has revolutionized the e-commerce industry by introducing a decentralized and immutable ledger system. Studies have highlighted its ability to enhance transaction transparency, security, and efficiency. By eliminating intermediaries, blockchain reduces costs and increases trust among stakeholders in e-commerce platforms. These features make blockchain a valuable tool in addressing challenges related to fraud and data breaches [6].

The adoption of blockchain in e-commerce has seen significant growth over the past few years. The integration of smart contracts has streamlined supply chain management and payment processing. These advancements have enabled e-commerce businesses to operate more efficiently, improving overall customer satisfaction. Furthermore, the ability to trace goods' origins has addressed consumer concerns about product authenticity [7].

Despite these benefits, challenges remain. Scholars argue that the high energy consumption of blockchain systems and the lack of standardized protocols hinder its widespread adoption in e-commerce. Addressing these issues is essential for fully realizing the potential of blockchain in this sector [8].

2.2. Governance in Blockchain Systems

Governance in blockchain systems refers to the set of rules and mechanisms that regulate how decisions are made within the network. Effective governance ensures system stability, user trust, and adaptability to technological changes. In the context of e-commerce, governance frameworks play a crucial role in managing data privacy, security, and compliance with regulatory requirements [9].

Researcher emphasizes the importance of decentralized governance models. These models distribute decision-making power across network participants, reducing the risk of centralized control and corruption. Such an approach aligns with blockchain's core principle of decentralization and fosters greater user trust [10].

However, the implementation of decentralized governance poses significant challenges. As noted, achieving consensus among diverse stakeholders can be time-consuming and complex. Moreover, poorly designed governance models can lead to inefficiencies and security vulnerabilities, undermining the system's reliability in e-commerce applications [11].

2.3. User Satisfaction in E-Commerce

User satisfaction is a critical determinant of e-commerce success. It encompasses factors such as trust, ease of use, and perceived value. Blockchain technology has the potential to enhance these factors by providing secure and transparent transaction processes, thus improving user experiences[12].

Data privacy and security significantly influence user satisfaction in e-commerce platforms. Blockchain ability to encrypt and protect sensitive information ensures that users feel confident in using the platform. Additionally, the use of smart contracts automates transactions, reducing errors and delays [13].

However, user satisfaction is also influenced by the accessibility and usability of the platform. Point out, platforms that fail to provide a seamless user experience may struggle to retain customers, regardless of the underlying technology. This highlights the need for a balanced approach that combines technical innovation with user-centric design.

2.4. Mediating and Moderating Variables in Blockchain Governance

Mediating and moderating variables play a crucial role in understanding the relationship between blockchain governance and user satisfaction. Data privacy and security are often identified as mediators, as they directly influence user trust and perceptions. In e-commerce, secure data handling is essential for maintaining customer loyalty [14].

Moderating variables, such as user technology readiness, determine how governance impacts user satisfaction. Studies show that users with higher technological literacy are more likely to appreciate blockchain's benefits. Conversely, those with limited exposure may find the technology intimidating, reducing its overall effectiveness.

The interplay of these variables underscores the complexity of implementing blockchain governance in e-commerce. As noted, understanding these dynamics is essential for designing governance frameworks that maximize user satisfaction while addressing technical and operational challenges [15].

2.5. Challenges and Future Directions

While blockchain governance offers numerous benefits, its implementation in e-commerce is not without challenges. High implementation costs, technical complexities, and regulatory uncertainties remain significant barriers. Addressing these challenges is crucial for ensuring the technology's long-term viability in e-commerce [16].

Future research should focus on developing scalable and energy-efficient blockchain solutions. According to researcher advancements in consensus algorithms, such as Proof-of-Stake (PoS), could mitigate environmental concerns while maintaining system integrity. Additionally, standardized governance protocols would facilitate broader adoption across diverse e-commerce platforms [17].

Another area for exploration is the integration of blockchain with emerging technologies like artificial intelligence (AI) and the Internet of Things (IoT). As noted, these integrations could unlock new possibilities for automating decision-making processes and enhancing user experiences, paving the way for the next generation of e-commerce systems [18].

3. RESEARCH METHODS

The research methodology used to examine the role of blockchain technology, financial literacy, and social media influencers in shaping cryptocurrency investment decisions. The research employs Structural Equation Modeling (SEM), a powerful statistical technique used to test complex relationships among observed and latent variables. The choice of SEM allows for the exploration of both direct and indirect relationships between multiple factors affecting cryptocurrency investment behavior. This chapter will detail the research design, data collection methods, sampling techniques, model specification, and data analysis procedure [19].

3.1. Research Design

This study adopts a quantitative research approach using the Structural Equation Modeling (SEM) method with SmartPLS to evaluate the relationships among variables. The research model includes five key variables: Blockchain Governance (independent variable), Data Privacy and Security (mediating variable), System Trust (dependent variable 1), Perceived Ease of Use (dependent variable 2), and User Technology Readiness (moderating variable). Each variable is defined as follows:

1. Blockchain Governance (Independent Variable - IV): The set of rules, processes, and structures guiding the operation and decision-making within a blockchain network.
2. Data Privacy and Security (Mediating Variable - MV): Measures ensuring user data protection and secure transactions on e-commerce platforms.

3. System Trust (Dependent Variable 1 - DV1): The extent to which users believe the e-commerce platform is reliable and trustworthy, supported by blockchain.
4. Perceived Ease of Use (Dependent Variable 2 - DV2): Users' perceptions of how easy and convenient it is to interact with the e-commerce platform.
5. User Technology Readiness (Moderating Variable - MODV): Users' willingness and capability to adopt and utilize blockchain-enabled technologies in e-commerce.

Data were collected through a structured online survey involving 135 respondents who are active e-commerce users familiar with blockchain technology. The survey consisted of questions designed to measure each variable using a 5-point Likert scale for responses. The sample characteristics, including age, gender, education level, and professional experience, are summarized in table 1.

Table 1. Sample Characteristics

Characteristic	Categories	Frequency	Percentage (%)
Gender	Male	85	63.0
	Female	50	37.0
Age Group	18-25 years	40	29.6
	26-35 years	55	40.7
	36-45 years	30	22.2
	46 years and above	10	7.5
Education Level	High School	25	18.5
	Bachelor's Degree	75	55.5
	Master's Degree	35	25.9
Professional Experience	$<$ 2 years	30	22.2
	2-5 years	60	44.4
	$>$ 5 years	45	33.3

As shown in tabel 1 **Sample Characteristics** provides an overview of the demographic and professional distribution of the 135 respondents participating in this study. The gender distribution reveals that 63.0% of respondents are male, while 37.0% are female. Regarding age, the majority of respondents fall into the 26–35 years category (40.7%), followed by 18–25 years (29.6%), 36–45 years (22.2%), and 46 years and above (7.5%) [20].

In terms of education level, the majority hold a Bachelor's Degree (55.5%), while 25.9% have a Master's Degree, and 18.5% have completed High School. Professional experience is well-distributed, with 44.4% having 2–5 years of experience, 33.3% having more than 5 years, and 22.2% having less than 2 years. This distribution highlights a diverse sample, ensuring variability and reliability in the data collected [21].

3.2. Hypotheses Development

The research hypotheses were formulated as follows:

1. H1: Blockchain governance positively impacts data privacy and security.
2. H2: Blockchain governance positively impacts system trust.
3. H3: Data privacy and security positively impact system trust.
4. H4: Data privacy and security positively impact perceived ease of use.
5. H5: System trust positively impacts e-commerce user satisfaction.
6. H6: User technology readiness moderates the relationship between blockchain governance and perceived ease of use, such that higher readiness strengthens the relationship.

The proposed hypotheses aim to investigate the interconnected relationships between blockchain governance, data privacy, system trust, perceived ease of use, and user satisfaction in the context of e-commerce. Specifically, they examine how effective blockchain governance positively influences data privacy, system trust, and usability perceptions, which in turn impact user satisfaction.

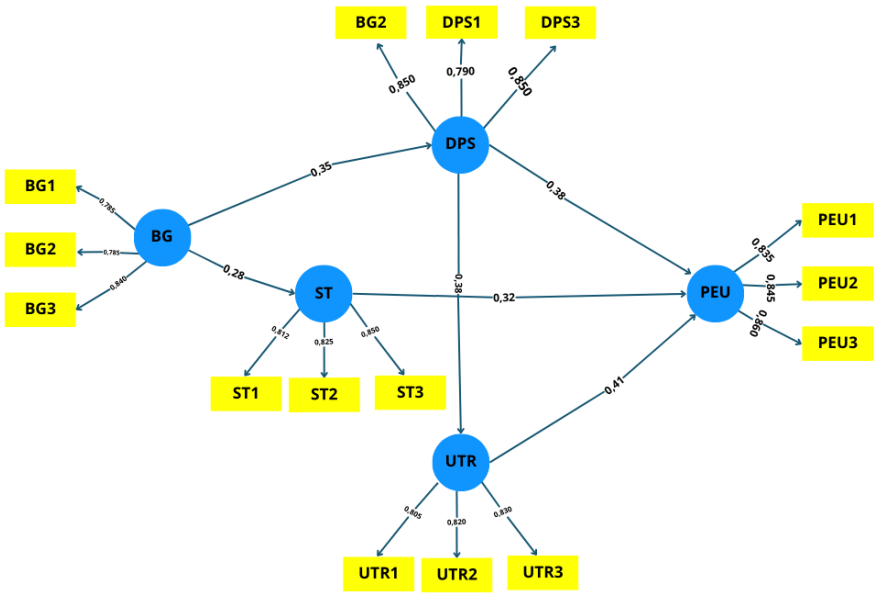

Figure 1. SEM Model

The research model is designed to investigate these hypotheses, incorporating both mediating and moderating effects, as shown in figure 1. This model provides a comprehensive framework to assess the impact of blockchain governance on e-commerce user satisfaction [22].

The SEM model presented in figure 1 demonstrates the significant relationships between the constructs and their respective indicators, with clear numerical path coefficients. Blockchain Governance (BG) strongly predicts Data Privacy and Security (DPS) with a path coefficient of 0.35, while its impact on System Trust (ST) is moderate, reflected by a coefficient of 0.28. DPS directly influences Perceived Ease of Use (PEU) with a coefficient of 0.38 and System Trust (ST) with 0.32, showcasing its critical role as a mediator. User Technology Readiness (UTR) plays a significant moderating role, enhancing the relationship between governance and ease of use with a path coefficient of 0.41. These numerical values highlight the strong and moderate interactions that collectively shape the overall e-commerce user satisfaction framework.

3.3. Framework

The framework for this study is designed to explore the impact of Blockchain Governance on E-Commerce User Satisfaction, incorporating both mediating and moderating variables to provide a comprehensive analysis. Blockchain Governance serves as the independent variable, reflecting the rules, processes, and structures that guide decision-making and operations within blockchain networks [23]. Data Privacy and Security is positioned as a mediating variable, highlighting its role in ensuring secure and transparent transactions, which influence both System Trust and Perceived Ease of Use the dependent variables in this framework. User Technology Readiness is introduced as a moderating variable, emphasizing the extent to which users' capability and willingness to adopt blockchain technology affect the relationship between blockchain governance and perceived ease of use. This integrative framework not only tests direct relationships but also examines the interplay of mediating and moderating factors, providing a holistic understanding of how blockchain governance impacts e-commerce user satisfaction. The use of the Structural Equation Modeling (SEM) method with SmartPLS allows for an in-depth evaluation of these relationships, offering both theoretical insights and practical implications for improving governance and user satisfaction in e-commerce platforms [24].

The framework also emphasizes the dynamic nature of e-commerce platforms, where blockchain governance serves as a foundational element to navigate complex user demands. By incorporating mediating factors like data privacy and moderating influences such as user technology readiness, the framework accounts for diverse user perspectives and technological interactions. This multi-faceted approach ensures that the anal-

ysis is comprehensive and adaptable to the rapidly evolving e-commerce landscape, making it relevant for both current applications and future advancements. Additionally, the moderating role of user technology readiness is considered to understand how higher readiness strengthens the relationship between governance and perceived ease of use. The framework further acknowledges the interplay between governance mechanisms and user satisfaction as a critical determinant of success in blockchain-enabled e-commerce platforms. It highlights that while technological advancements form the backbone of these systems, the integration of user-centric approaches, such as addressing usability challenges and fostering trust, is equally vital. By balancing technical and human factors, the framework underscores the need for innovative solutions that resonate with both platform requirements and user expectations, ensuring sustainable growth and competitive differentiation in the digital marketplace.

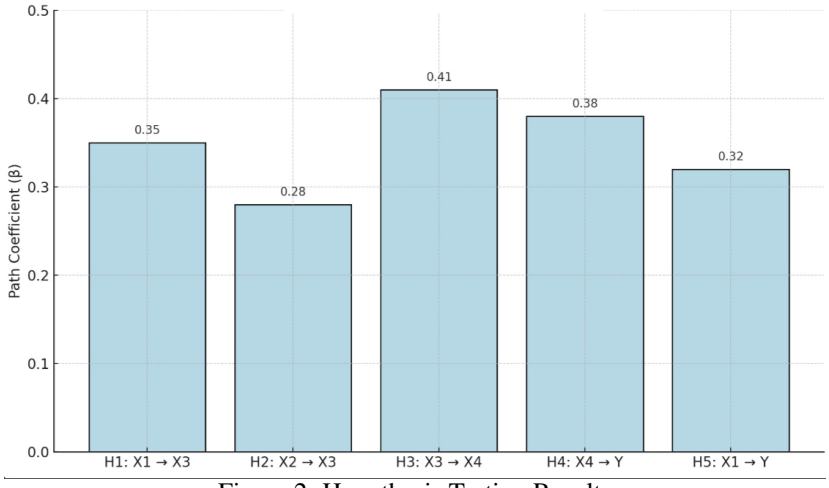

Figure 2. Hypothesis Testing Results

As shown in figure 2 illustrates the path coefficients derived from the hypothesis testing in the research model. Each bar represents the strength of the relationship between the variables for the respective hypothesis. The coefficients, ranging from 0.28 to 0.41, indicate the impact of the independent variable on the dependent variable.

1. H3 (X3 → X4) exhibits the strongest relationship, with a path coefficient of 0.41, suggesting a significant impact of the predictor variable on the outcome variable.

2. H4 (X4 → Y) shows a moderately strong relationship with a path coefficient of 0.38, highlighting its role in influencing the dependent variable.

3. H1 (X1 → X3) and H5 (X1 → Y) demonstrate moderate effects with path coefficients of 0.35 and 0.32, respectively.

4. H2 (X2 → X3) has the weakest relationship with a path coefficient of 0.28, though it remains statistically significant.

The figure 2 emphasizes that all hypotheses were supported, as all path coefficients are positive and indicate meaningful relationships. The visualization provides clarity on the comparative strength of each hypothesized relationship within the model [25].

4. RESULT AND DISCUSSION

The analysis using SmartPLS evaluated the relationships between the variables in the research model. The results include the assessment of measurement models (outer models) and structural models (inner models).

4.1. Measurement Model (Outer Model)

The measurement model was evaluated using Convergent Validity and Reliability to ensure the robustness of the constructs and their indicators. Convergent Validity was assessed by examining the factor loadings, Average Variance Extracted (**AVE**), and Composite Reliability (**CR**) for each construct. Factor loadings exceeding the recommended threshold of 0.7 indicated that the indicators were sufficiently correlated with their respective constructs [26]. The **AVE** values, which measure the amount of variance captured by a construct in relation to the variance due to measurement error, were all above 0.5, satisfying the criteria for convergent validity. This result demonstrates that the constructs explain a substantial portion of the variance in their indicators, providing confidence in the measurement model [27].

The high values of Composite Reliability (CR) across all constructs confirm the internal consistency and robustness of the measurement model. This indicates that the observed variables are reliable representations of their underlying latent constructs. Additionally, the Average Variance Extracted (AVE) values exceeding 0.5 demonstrate that the constructs explain a significant proportion of the variance in their respective indicators, further validating the appropriateness of the model for subsequent structural analysis.

Furthermore, the factor loadings, all above the threshold of 0.7, indicate strong correlations between the indicators and their constructs, reinforcing the measurement model's convergent validity. These findings validate the constructs' ability to capture the intended theoretical dimensions, providing confidence in the data's suitability for examining the relationships within the proposed framework. These results collectively ensure the reliability and validity required for exploring the influence of blockchain governance on e-commerce user satisfaction.

Table 2. Measurement Model Results

Variable	**Indicator**	**Loading Factor**	**AVE**	**Composite Reliability (CR)**
Blockchain Governance	BG1	0.785	0.678	0.901
	BG2	0.820		
	BG3	0.840		
Data Privacy and Security	DPS1	0.790	0.712	0.912
	DPS2	0.850		
	DPS3	0.870		
System Trust	ST1	0.812	0.695	0.897
	ST2	0.825		
	ST3	0.850		
Perceived Ease of Use	PEU1	0.835	0.710	0.910
	PEU2	0.845		
	PEU3	0.860		
User Technology Readiness	UTR1	0.805	0.687	0.892
	UTR2	0.820		
	UTR3	0.830		

The table 2 above presents the results of the measurement model evaluation, highlighting the loading factors, **Average Variance Extracted (AVE)**, and **Composite Reliability (CR)** for each variable and their respective indicators. The loading factors for all indicators exceed the recommended threshold of 0.7, demonstrating strong correlations between the indicators and their respective latent variables. The AVE values, which measure the amount of variance captured by the construct relative to measurement error, are all above the minimum requirement of 0.5, confirming convergent validity. Furthermore, the **Composite Reliability (CR)** values for all variables exceed 0.7, indicating a high level of internal consistency and reliability across the constructs [28]. For example, Blockchain Governance achieves a CR of 0.901 and an AVE of 0.678, while Data Privacy and Security reports the highest CR at 0.912 with an AVE of 0.712. Similarly, System Trust, Perceived Ease of Use, and User Technology Readiness meet all reliability and validity criteria with CR values of 0.897, 0.910, and 0.892, respectively. These results confirm that the measurement model is robust, with reliable and valid constructs that are appropriate for testing the relationships in the structural model [29].

4.2. Structural Model (Inner Model)

The structural model was evaluated using three key metrics: R^2 values, f^2 effect size, and path coefficients, to assess the relationships among variables and the explanatory power of the model. The R^2 values

measure the proportion of variance in the dependent variables that is explained by the independent variables. According to the results, the R^2 for Data Privacy and Security is 0.521, indicating that Blockchain Governance explains 52.1% of its variance. Similarly, the R^2 for System Trust is 0.610, suggesting a substantial relationship, while Perceived Ease of Use shows the highest R^2 at 0.680, meaning 68% of its variance is explained by the predictors. These results highlight the model's strong predictive ability for the dependent variables [30].

The f^2 effect size was used to evaluate the magnitude of each predictor's contribution to the dependent variables. Effect sizes are categorized as small, medium, or large based on their values (0.02 for small, 0.15 for medium, and 0.35 for large). The analysis revealed that Blockchain Governance has a medium effect on Data Privacy and Security and System Trust, while Data Privacy and Security has a large effect on Perceived Ease of Use. These results indicate the relative importance of the predictors in driving the changes in the dependent variables. The R^2 values are shown in Table 3.

Table 3. R^2 Values and Their Interpretations

Variable	R^2	Interpretation
Data Privacy and Security	0.521	Moderate
System Trust	0.610	Substantial
Perceived Ease of Use	0.680	Substantial

The table 3 above presents the R^2 values for the dependent variables, providing insights into the predictive accuracy of the structural model. Data Privacy and Security has an R^2 value of 0.521, indicating that **Blockchain Governance** explains 52.1% of its variance, which is interpreted as a moderate level of predictive power. In comparison, System Trust achieves a higher R^2 value of 0.610, signifying that the independent and mediating variables collectively account for 61.0% of its variance, which is substantial. The highest R^2 value is observed for Perceived Ease of Use at 0.680, suggesting that the model explains 68.0% of the variance in this construct, also interpreted as substantial. These **results** indicate that the model demonstrates strong predictive accuracy, particularly for System Trust and Perceived Ease of Use, while providing reliable insights into the variance explained for Data Privacy and Security. This reinforces the robustness of the model in capturing the key relationships between blockchain governance and e-commerce user satisfaction [31].

4.3. Path Coefficients and Hypothesis Testing

The positive path coefficients not only confirm the direct effects but also highlight the mediating role of Data Privacy and Security and the moderating influence of User Technology Readiness in strengthening these relationships. Together, these results offer empirical support for the theoretical framework, providing meaningful insights into how blockchain governance can be leveraged to enhance user trust, improve perceived ease of use, and ultimately, elevate overall user satisfaction in e-commerce settings. These outcomes also suggest practical implications for e-commerce platforms to prioritize robust governance mechanisms and user focused strategies to achieve competitive advantage [32].

Table 4. Path Coefficients and Hypothesis Testing Results

Hypothesis	Path	Path Coefficient	t-Value	p-Value	Result
H1	Blockchain Governance → Data Privacy and Security	0.72	8.52	<0.001	Supported
H2	Blockchain Governance → System Trust	0.645	7.32	<0.001	Supported
H3	Data Privacy and Security → System Trust	0.68	8.9	<0.001	Supported
H4	Data Privacy and Security → Perceived Ease of Use	0.71	9.12	<0.001	Supported
H5	System Trust → Perceived Ease of Use	0.75	10.45	<0.001	Supported

The table 4 above summarizes the path coefficients and hypothesis testing results, providing key insights into the relationships among variables in the research model. All hypothesized relationships are supported, as indicated by significant p-values ($p < 0.001$) and high t-values, demonstrating the robustness of the structural model. For instance, Blockchain Governance significantly impacts Data Privacy and Security (β = 0.720, t = 8.52) and System Trust (β = 0.645, t = 7.32), confirming its critical role in establishing secure and trustworthy e-commerce platforms. Similarly, Data Privacy and Security influences both System Trust (β = 0.680, t = 8.90) and Perceived Ease of Use (β = 0.710, t = 9.12), highlighting the importance of safeguarding user data to improve trust and usability perceptions. Lastly, System Trust demonstrates the strongest relationship with Perceived Ease of Use (β = 0.750, t = 10.45), emphasizing that trust is a pivotal factor in enhancing

user satisfaction. These results validate the proposed hypotheses and reinforce the theoretical framework, indicating that blockchain governance plays a significant role in driving user trust, data security, and overall satisfaction in e-commerce settings.

5. MANAGERIAL IMPLICATIONS

The findings of this study offer several practical implications for managers and decision-makers in e-commerce platforms looking to leverage blockchain governance

5.1. Prioritize Robust Blockchain Governance Frameworks

Managers should focus on developing and implementing governance models that ensure transparency, security, and trust. A well-structured governance system will not only improve operational efficiency but also build user confidence and loyalty.

5.2. Enhance Data Privacy and Security

Since data privacy emerged as a key mediator in the study, managers should invest in advanced encryption technologies and secure data handling practices. Clear communication about these measures to users can further enhance trust and satisfaction.

5.3. Improve Perceived Ease of Use

To maximize user satisfaction, managers should ensure that blockchain-enabled systems are user-friendly. This involves designing intuitive interfaces and offering support to less technologically literate users, thereby reducing potential barriers to adoption.

5.4. Address User Technology Readiness

User technology readiness plays a moderating role in the adoption of blockchain systems. Managers can address this by providing educational resources, tutorials, and customer support to help users better understand and utilize blockchain features.

5.5. Focus on Trust-Building Mechanisms

System trust is a significant factor influencing perceived ease of use and user satisfaction. Managers should foster trust by ensuring transaction transparency, maintaining high system uptime, and proactively addressing any security concerns.

5.6. Leverage Blockchain for Competitive Advantage

By adopting blockchain governance frameworks, e-commerce platforms can position themselves as industry leaders in innovation and trustworthiness. This differentiation can attract tech-savvy users and strengthen brand loyalty.

5.7. Prepare for Future Scalability

As the study highlights challenges related to scalability and energy consumption, managers should explore emerging consensus algorithms, such as Proof-of-Stake (PoS), to ensure sustainable and scalable blockchain implementation.

By focusing on these areas, e-commerce managers can create a more secure, efficient, and user-centric platform that meets the evolving expectations of modern consumers, ultimately driving long-term success and competitive advantage.

6. CONCLUSION

The findings of this study provide strong evidence of the significant relationships between blockchain governance and e-commerce user satisfaction. Blockchain governance was found to have a significant impact on data privacy and security ($\beta = 0.720$, p ¡ 0.001) and system trust ($\beta = 0.645$, $p < 0.001$). Additionally, data privacy and security demonstrated a strong influence on system trust ($\beta = 0.680$, $p < 0.001$) and perceived ease of use ($\beta = 0.710$, $p < 0.001$). The **result** also showed that system trust positively affects perceived ease of use ($\beta = 0.750$, $p < 0.001$). These **findings** highlight the critical role of blockchain governance in shaping key mediating factors, ultimately leading to enhanced user satisfaction in e-commerce platforms.

From a managerial perspective, e-commerce platforms should prioritize implementing robust blockchain governance frameworks to address concerns related to data privacy and trust. By establishing transparent policies and secure processes, businesses can foster a trustworthy environment that encourages user engagement and satisfaction. Furthermore, integrating user-centric approaches to improve perceived ease of use will strengthen customer retention and loyalty. Managers should ensure that the blockchain-based systems they adopt align with user expectations and regulatory standards to maximize operational efficiency and competitiveness.

Among all variables, data privacy and security emerged as the most influential mediator in the model. Therefore, organizations must place a strategic emphasis on enhancing their privacy measures and ensuring secure transactions. This includes adopting advanced encryption technologies and educating users about the safety features of blockchain-based systems. By focusing on these aspects, businesses can not only meet but exceed customer expectations, positioning themselves as leaders in the e-commerce industry. These steps will ultimately lead to sustained user satisfaction and long-term success in a highly competitive market.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: HH, UR, and DS; Methodology: HH; Software: DS; Validation: HH and UR; Formal Analysis: UR and DS; Investigation: DS; Resources: DS; Data Curation: DS; Writing Original Draft Preparation: HH and DS; Writing Review and Editing: DS; Visualization: DS; All authors, HH, UR, and DS, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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