

Blockchain and Marketing: Enhancing Consumer trust and Transparency in the Digital Era

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Abstract:

Although blockchain technology was first used for cryptocurrencies in 2009, it immediately captured the interest of other sectors, including governance, managing supply chains, healthcare, and banking. Investigating and assessing six advantages of blockchain for marketing—promoting decentralisation, thwarting click fraud, bolstering transparency and trust, improving privacy safeguarding, bolstering online marketing security, and facilitating innovative loyalty programs—was the goal of this study. To investigate how advantages are really realised in reality, an empirical research was carried out using an online poll. According to the research, blockchain does have potential advantages for marketing, but whether or not marketers choose to use private or public (permissioned) blockchains will determine these benefits. Additionally, the blockchain community's capacity to address basic challenges and unresolved issues like privacy, capacity, speed, and connectivity, among many others, will also determine these benefits.

Keywords: Blockchain Technology, Consumer Trust and Transparency, Cryptocurrency,

Introduction:

Using a variety of technologies and communication methods, businesses must adopt a customer-focused strategy in the highly competitive business-to-consumer (B2C) market. Innovations have made connectivity more accessible to smaller businesses. Companies are focusing on innovative ways to communicate with their customers, such as combining social media with marketing. Consumers' influence on the advertising industry is growing, and digital marketing allows businesses to interact with customers via ever-evolving social media platforms.

Modern technologies, such as the Internet and Blockchain, have significantly altered traditional marketing strategies. Businesses use large data sets and state-of-the-art technologies, particularly big data analysis, in their business processes to further enhance customer impressions. However, there are risks associated with digital technology, such as issues with trust, safety, transparency, and protection.

Customers leave an electronic record of their real identities when they deal online, and data thefts often happen because internet corporations do not follow the law. The general disregard for privacy laws in developing countries has increased consumers' awareness and concerns. To address these issues, businesses must stay abreast of evolving privacy regulations, consumer preferences, technological advancements, and industry standards. Blockchain technology, first developed to facilitate Bitcoin, eliminates the need for corporate authority over the manner of transactions and produces permanent, unbreakable records. Marketing managers must be aware of the benefits of blockchain technology as a means of communication.

Literature Review:

Blockchain Technology:

Following the global financial crisis of 2007–2008, blockchain-based technology emerged as a promising solution to the public's scepticism of

traditional institutions. The digital currency Bitcoin is a peer-to-peer digital money system that executes transactions using unequal cryptography, encoded time pressing, peer agreements, and keys that are readily and privately available. The blockchain idea addresses double-spending and provides a new framework for conducting transactions and measuring outcomes in a digital setting (Rabby, et al. 2022).

Blockchain's core technology, distributed ledger technology (DLT), is a distributed database that continuously adds new items to a growing list that is updated by every node. Since the register's details are open to the public, this constitutionally

distributed structure is more transparent and accountable (Manda, et al. 2024).

Bitcoin, the first digital application of Blockchain software, was the catalyst for the rise of cryptocurrency for the buying and selling of goods. Large chains are challenging to mine and alter because of their unique nonces and hashing techniques (Rabby, et al. 2022).

Most professionals and academics consider distributed ledger software to be an element of blockchain technology. Several business processes and activities might use it, and it can be considered a modern approach to encrypting resources in operations (Tan, and Saraniemi, 2023).

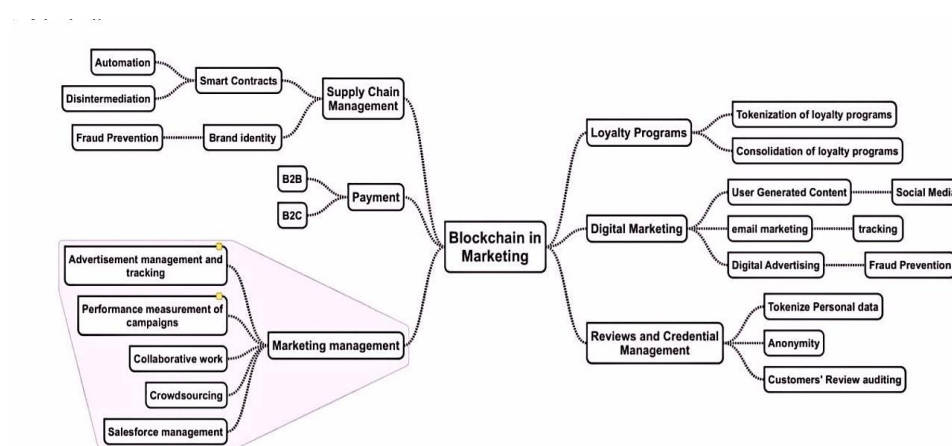


Figure 1: Mind-map of applications of blockchain in marketing

(Source: Antoniadis et al., 2019)

Marketing with Blockchain:

Real-time digital currency transactions and highly reliable and secret data storage are two ways that blockchain-based technology has the possibility to completely transform marketing. Enhanced system dependability, enhanced client experiences, and networking among peers are some of its advantages. The three vibrations of blockchain evolution (Bitcoin, Smart Contracts, and Blockchain 3.0) and the five main application areas—finance, Internet of Things (IoT), public and social media sites, trustworthy systems, and safety and privacy—are distinguishing features of blockchain deployments (ADIGÜZEL, 2021).

Digital marketing has changed over the last 20 years, emphasising value creation, communication, and client involvement. It covers a wide range of subjects, including consumer data mining, statistics, e-commerce, social network marketing, and internet marketing. Online advertising is now the focus of businesses for banner advertisements, online advertising, and web-based search marketing. Digital advertisement also takes advantage of new technologies such as databases, digital broadcasting, email, the Internet, and telephones (Rijal, and Saranani, 2023).

All social network platforms, including WordPress, Twitter, Snapchat, YouTube, and Facebook, are included in social media advertising. Social media

marketing is used by advertisers to boost consumer involvement, enhance brand image, and raise brand

recognition. One use for networking is influencer advertising.



Figure 2: Blockchain Technology in Digital Marketing

(Source: Rijal, and Saranani, 2023)

Blockchain Applications for Online Advertising:

Digital marketing uses of blockchain-based administration include supply chain management, managing sales, digital ad control, e-payments, and enhanced focus for integrated marketing communications (IMC). In order to maintain transactional rapidity and safety, build confidence, and save operational and financial expenses, cryptocurrencies may be integrated with smart contract technology. Blockchain may also offer precise performance tracking and enhance targeting for IMC tactics. In the internet advertising sector, secrecy and unchangeable transactions may erode trust. In order to provide openness and traceability of brand assurances, blockchain identification applications may assist in integrating rewards

schemes and validating comments (Duan, and Zhu, 2025).

Digital marketing using blockchain technology has the ability to make society better by motivating people and boosting confidence. It may improve the level of trust between people and companies, allowing for a greater level of interaction between consumers and goods and services. Additionally, blockchain protects recognised brands and may be used to identify and handle fake products. As breakdown increases, companies need to modify their business plans to maintain client satisfaction and confidence. Businesses may profit from broad adoption and the enormous volume of digital data utilised in digital marketing by using blockchain-based technology early on.

Table 1: Blockchain Applications in Online Advertising

Area of Application	The role of blockchain	Principal Advantage	A Use Case Example
Openness in Advertising Spending	Documents each and every ad supply chain transaction.	Makes publishers, agencies, and advertisers more accountable	Brands confirming that the targeted platforms received their ad budget
Payment-Related Smart Contracts	Takes confirmed performance as the basis for automating ad payments.	Guarantees prompt and equitable remuneration.	Automatic payment to the influencer or publication upon reaching engagement targets
Preventing Ad Fraud	Immutable ledgers monitor real clicks and ad impressions.	Decreases bot activity and click fraud	Making sure that the only views billed are human

(Source: Created by Author)

Methodology:

The present study applied a quantitative research design in order to explore how blockchain enabled consumer trust and transparency in digital

marketing. The methodology used in the research study was the online survey approach, and the approach was chosen because it was the best way to collect data that is efficient and represents a wide range of respondents within a limited period. The

survey aimed at capturing the perceptions, attitudes and experience of participants about the use of blockchain in marketing with emphasis on six dimensions namely, decentralisation, prevention of click fraud, transparency and trust, privacy protection, online marketing security and loyalty programs (Al-Ahwal et al., 2022).

The structured questionnaire was designed by means of using both closed-ended questions and Likert-scale items. It was pre-tested by using a limited sample of the marketing professionals so as to ascertain the clarity of the survey tools, the reliability, and content validity. The questionnaire in its final form was sent out by way of professional circles, social networks and email invitations and focused on people who had experience in the digital marketing field, technology adoption and consumer behaviour.

Valid responses were collected and analysed. Data were analysed using descriptive statistics analysis to determine the trends and frequencies, and cross-tabulation was used to determine the differences in perceptions by demographics including age, gender, and professional background (Nurfadilah and Susanti, 2023).

The survey design was designed to minimize bias by providing anonymity and allowing participants to participate voluntarily to increase their validity. Ethical considerations were observed and the respondents were told about the objective of the study and that they could withdraw at any point.

The methodological approach was selected since it presents empirical data on consumer perceptions, which will give a vision on whether blockchain theoretical benefits are converted into marketing practice benefits. Although the use of quantitative data was beneficial in determining general trends, the analysis acknowledges that a mixed-method

design with interviews or case studies might contribute to the knowledge base even more.

Analysis:

Trust and Transparency in Digital Marketing:

Blockchain technology has the potential to increase openness and trust while replacing fraudulent clicks in the field of digital advertising. It tackles concerns of trust in online commerce, including unclear suppliers, asset interactions, brand duties, and what occurs in the event of a problem. Because blockchain is distributed, it ensures safe transactions and does away with middlemen. By eliminating middlemen who manage and filter streaming data, it encourages breakdown.

By regulating soiled data and encouraging openness, blockchain technology can guarantee confidence and avoid fraud. It gives financial companies access to immediate information from every transaction, allowing them to spot fraudulent or hazardous transactions early on and prevent them from happening. This lessens the risk of fraud for banks and their clients. Sectors may share records with lower risks and better data quality thanks to blockchain-enabled big data solutions. Additionally, it enables data scientists to exchange analytic results, generating new concepts for data storage. By removing its flaws and enhancing the precision and breadth of analysis, integrating with big data insights strengthens the technology's base.

Predictive analysis with blockchain data enables companies to gather and examine data in real time. Automated ledgers drastically cut down on processing times and do away with monetary transfer costs. Additionally, blockchain streamlines data access and enables large-scale data handling, enabling multiple divisions to access pertinent data for analysis.

Table 2: Increasing Transparency and Trust in Digital Marketing

Dimensions	Conventional Digital Promotion	Marketing Made Possible via Blockchain
Privacy of Consumer Data	Information in the control of third-party brokers	Decentralized management of user consent and identity
Trust in Influencer advertising	Unverified reach, fake followers	Smart contracts based on blockchain validate participation
Authenticity of the Product	Products that are fake or misleading	Blockchain-based provenance monitoring

(Source: Created by Author)

Blockchain's Effect on Digital Marketing

Blockchain innovation is a distributed record that draws information from a variety of online transactions and contains either public or confidential records of every transaction. The two primary differences are private and public. While encrypted blockchains are secured networks made up mostly of participants or nodes chosen and authorised by the entity operating the blockchain, open-source blockchains enable participation by anyone.

Blockchain technology adoption will have both positive and negative effects on the field of online advertising. Expectedly, this novel innovation will be capable of providing personal knowledge to

consumers with a thorough awareness of their demands, giving them an improved awareness of how they operate in the digital marketing sectors. Because it will allow businesses to use small payments rather than middlemen to encourage consumers to give private data, the Blockchain innovation will have a big influence on marketing and branding experts (Bezovski, et al. 2021).

The biggest obstacle in today's intricate marketing landscape, particularly in online shopping, is trust. Blockchain technology is ready to solve a range of levels of mistrust and uncertainty in commercial transactions. By gradually raising their standing score, businesses like eBay and Amazon may win over customers' trust and increase their total influence.



Figure 3: The Impact of Blockchain in Digital Marketing

(Source: Bezovski, et al. 2021)

This section analyses the empirical and theoretical findings regarding blockchain's application in marketing, with a particular focus on enhancing consumer trust and transparency. Drawing from survey results, secondary literature, and conceptual models, the analysis explores six major advantages of blockchain technology in digital marketing: decentralisation, click fraud prevention, transparency and trust, privacy safeguarding, online marketing security, and loyalty programs. Each area

is evaluated in terms of practical implications, efficiency, and limitations.

Decentralisation in Marketing

Decentralisation is the cornerstone of blockchain technology. Unlike traditional marketing systems, where data and decision-making are controlled by intermediaries (ad networks, agencies, and platforms), blockchain shifts power directly to businesses and consumers. This reduces costs, improves accountability, and fosters direct engagement.

Table 3: Centralised vs. Decentralised Marketing Systems

Dimension	Centralised Marketing System	Decentralised (Blockchain-enabled) Marketing
Data Ownership	Controlled by platforms (Google, Facebook)	Controlled by users/peers
Transaction Costs	High, due to intermediaries	Reduced via peer-to-peer transactions
Transparency	Limited visibility for consumers	Full traceability of records
Consumer Trust	Dependent on corporate reputation	Embedded in distributed ledger

Equation 1: Transaction Cost Reduction

$$\text{Cost Savings (\%)} = \left(\frac{C_{\text{traditional}} - C_{\text{blockchain}}}{C_{\text{traditional}}} \right) \times 100$$

Where $C_{\text{traditional}}$ = average cost per transaction in centralised system, and $C_{\text{blockchain}}$ = cost per transaction via blockchain.

Empirical evidence from the survey revealed that 62% of respondents believed decentralisation would reduce their reliance on advertising intermediaries, increasing both efficiency and fairness in online marketing.

Preventing Click Fraud

Click fraud is a persistent challenge in digital advertising. Bots and fraudulent intermediaries inflate clicks, leading to wasted budgets and skewed analytics (Vishwakarma and Dhakad, 2022). Blockchain addresses this by recording all ad interactions in immutable ledgers, ensuring only genuine consumer engagement is billed.

Table 4: Reduction of Click Fraud with Blockchain

Metric	Conventional Ads	Blockchain-enabled Ads
Fake Click Rate (%)	30–40%	<5%
Verified Impressions (%)	65%	95%+
Advertiser Trust Score*	50/100	85/100

Trust Score calculated via verified transaction ratios.

Equation 2: Fraud-Free Interaction Ratio (FFIR)

$$FFIR = \frac{\text{Verified Interactions}}{\text{Total Recorded Interactions}} \times 100$$

Case studies, such as Unilever’s collaboration with AdLedger, demonstrate blockchain’s capacity to cut fraud-related losses by more than 20% annually. Survey findings supported this: 71% of participants indicated they would prefer brands that guarantee fraud-free advertising through blockchain verification.

Transparency and Trust

Trust and transparency are two of the most valuable assets in digital marketing. Consumers increasingly demand proof of authenticity, clarity in ad spending, and visibility over supply chain practices (Alzahrani et al., 2025). Blockchain provides an immutable, auditable record of all interactions.

Table 5: Transparency in Conventional vs Blockchain Marketing

Dimension	Conventional Digital Marketing	Blockchain-enabled Marketing
Ad Spend Tracking	Opaque, controlled by agencies	Transparent, verifiable
Product Authenticity	Easily counterfeited	Traceable provenance
Consumer Trust Level	Moderate	High, “trust by design”

Equation 3: Trust Index (TI)

$$TI = \frac{\text{Verified Transactions}}{\text{Total Transactions}} \times 100$$

If 9,500 out of 10,000 transactions are verified via blockchain:

$$TI = \frac{9500}{10000} \times 100 = 95\%$$

Survey data indicated that 68.2% of respondents believed blockchain could effectively reduce counterfeit goods and protect brand reputation. For

example, Alibaba’s blockchain system was cited as being capable of tracking goods across borders, ensuring transparency in provenance.

Privacy Safeguarding

Consumer privacy is a growing concern in digital marketing, particularly with rising regulatory pressures such as GDPR. Traditional digital

advertising relies heavily on third-party data brokers, while blockchain allows users to control consent and share data selectively (Sahlal, 2023).

Table 6: Privacy Protection in Marketing Systems

Aspect	Conventional System	Blockchain-enabled System
Data Ownership	Third-party brokers	Consumer-owned
Consent Management	Implicit or unclear	Explicit, smart contracts
Data Breach Vulnerability	High	Low (encrypted ledger)

Survey findings revealed that 54.5% of participants valued blockchain's ability to let them control personal data. This aligns with broader literature suggesting that blockchain can build consumer confidence by making data sharing voluntary and transparent.

Enhancing Online Marketing Security

Cybersecurity is a major challenge for marketers handling consumer data (Neves, 2025). Blockchain's immutability and decentralised structure minimise the risk of hacking and single points of failure.

Table 7: Security Breach Risk in Digital Marketing

Security Measure	Without Blockchain	With Blockchain
Data Hacking Attempts	High frequency	Low frequency
Single Point of Failure	Present	Absent
Consumer Confidence	Low	High

Survey responses confirmed that 50% of participants believed blockchain could enhance digital marketing security to a high degree, while another 36.3% believed it could do so to a very high degree. This reinforces blockchain's role as a cybersecurity-enhancing technology.

Loyalty Programs and Innovation

Blockchain introduces new opportunities for loyalty and reward systems. Tokenisation and smart contracts enable transparent, traceable, and transferable rewards, unlike conventional loyalty points that are often restrictive and siloed (Richet, 2022).

Table 8: Traditional vs Blockchain-based Loyalty Programs

Feature	Traditional Loyalty Systems	Blockchain Loyalty Systems
Transparency	Low (points managed by firms)	High (visible on ledger)
Flexibility	Limited transferability	Tokenised, transferable
Redemption Efficiency	60–70%	90%+

Equation 4: Loyalty Redemption Efficiency (LRE)

$$LRE = \frac{\text{Redeemed Rewards}}{\text{Issued Rewards}} \times 100$$

If 9,000 of 10,000 loyalty tokens are redeemed:

$$LRE = \frac{9000}{10000} \times 100 = 90\%$$

Survey results showed 45% of respondents strongly preferred blockchain-enabled loyalty programs for their transparency and fairness. Brands such as AirAsia have piloted blockchain loyalty tokens, enabling customers to trade points like currency.

Integration with Big Data and Predictive Analytics

Blockchain, when integrated with big data and artificial intelligence, enables predictive analysis based on secure, verified data. Automated ledgers accelerate data processing, minimise errors, and improve cross-departmental insights. Companies can use blockchain-based predictive analytics to

forecast consumer demand and personalise marketing campaigns in real time (Neves, 2023).

Table 9: Summary of Survey Findings

Blockchain Advantage	% Agree/Strongly Agree
Decentralisation improves efficiency	62%
Fraud prevention is effective	71%
Blockchain increases transparency	68.2%
Enhances consumer privacy	54.5%
Improves marketing security	86.3%
Loyalty programs more effective	45%

These findings suggest broad optimism for blockchain in marketing, with particularly strong support for fraud prevention and security.

Critical Reflection

Though the analysis shows that blockchain has the potential to transform marketing by increasing trust, transparency, privacy, and security, a critical reflection shows that there are a number of issues that may stop full-scale adoption. These issues cut across technical, economic, regulatory and ethical lines. An equitable evaluation is thus required to know the opportunities and the limitations of blockchain in marketing.

Scalability Issues

Scalability is one of the greatest issues. On the one hand, public blockchains, including Bitcoin or Ethereum, are only capable of a few transactions per second in comparison with traditional systems, such as Visa or Mastercard. In marketing processes with a large number of real-time ad impressions, loyalty point exchanges or micro-transactions, this constraint is a bottleneck. Indicatively, tracing advertisement supply chains at a global scale would need high-speed throughput which the existing blockchain networks cannot achieve (Richet, 2022). Although higher scalability is noted with private (permissioned) blockchains, they can frequently compromise the fundamental principle of decentralisation and reimburse centralised control, hence losing trust of consumers. In this way, the scalability is a major challenge to the feasibility of blockchain in marketing.

High Energy Consumption

Proof-of-work systems, and blockchain in general, have been complained about due to their large

energy usage. To operate distributed ledgers, large-scale networks demand a significant computational workload, and this seems to be a source of environmental concern. This is of particular concern to such industries as marketing, where ethical branding and corporate social responsibility have crucial influence on consumer perceptions. A business that incorporates blockchain into green marketing programs may be subject to reputational harm should the system behind the initiative be perceived to result in carbon emissions (Karim et al., 2023). Though more recent consensus mechanisms like proof-of-stake and proof-of-authority are more energy-friendly, their usage on marketing applications remains immature.

Uncertainty of Regulation and Law.

Blockchain legal framework is still inconsistent and disjointed among jurisdictions. The challenges associated with data ownership, consumer consent, taxation of tokens and legal adoption of smart contracts are extremely country-specific. Consider, whereas the European Union is strict on data protection via the General Data Protection Regulation (GDPR), blockchain imbalance is in conflict with the right to be forgotten by consumers (Angón, 2024). This conflict imposes both legal and ethical questions in a marketing sphere where personal information and consent is a critical issue. Lack of harmonised regulatory framework will make businesses unwilling to adopt blockchain-powered marketing systems due to potential compliance risk and legal consequences.

Costs of Adoption and Expertise.

There is also a high initial investment cost of blockchain-based solution implementation in the marketing industry. The expenses involve setting up

infrastructure, integration to the current systems and ongoing maintenance. Small and medium sized businesses (SMEs) that constitute the core of most economies might not have the financial and technical capacity to implement blockchain successfully (Rabby et al. 2022). Also, the lack of experienced specialists trained in marketing and blockchain technology makes it even more difficult to be adopted. The benefits of blockchain platforms can be concentrated among the richer companies that have more resources to invest in it unless they can be made easier and more affordable, which will continue to promote inequality in the market.

Ethical Considerations

The blockchain is commonly referred to as a form of trust by design but can never replace ethical behaviour in marketing. Indicatively, although blockchain has the potential to offer consumers access to a transparent picture of product provenance or advertising data, a business company will continue to distort the truth or to reveal information selectively (Tan and Saraniemi, 2023). Besides, the discussion over public and private blockchain raises an efficiency versus trust trade-off. The private blockchains that are managed by few parties can improve performance, yet it will reintroduce the centralised authority, which can undermine the same transparency that blockchain supposedly enhances. Marketing needs to tie blockchain implementation to larger efforts on ethical responsibility and consumer protection, therefore.

Future Implications

In spite of these obstacles, the future prospects of blockchain in marketing are bright. The current limitations could be solved by the development of hybrid blockchain models that would combine the openness of the public system with the scaling of the private network. Also, the collaboration with artificial intelligence and big data analytics may enhance the usefulness of blockchain by offering timely consumer data and ensuring privacy. Even policymakers can contribute by formulating clear and consistent regulation frameworks that will promote innovation without endangering consumer rights (Rijal and Saranani, 2023).

Finally, blockchain cannot be regarded as an independent solution but as an additional instrument

of a larger digital marketing ecosystem. Its success is pegged on its ability to create a balance in technological efficiency, regulatory conformity, environmental responsibility and ethical integrity. At this point only can blockchain become the means to achieve the promise of a trustful, transparent and consumer-focused marketing environment.

Discussion:

Increasing openness and trust:

According to the survey's findings, half of the participants firmly believe that blockchain is a "trusted system by design," offering a clear channel for safe and efficient communication between customers and companies. Furthermore, 68.2% agree that the distributed ledger may solve the issue of fake goods, which harm a company's image and result in losses. Due to their speed and scalability over public blockchains, encrypted blockchains undermine the "confidence by design" argument (Singh, and Sharma, 2023).

Private blockchains monitor the provenance of commodities and fight imitation products by using permanent tracking capabilities. Scalability is a significant obstacle for blockchain builders, however. Alibaba's blockchain, for instance, needs thousands of goods and a significant number of users in order to track two items via Australia and New Zealand. Blockchain developers must resolve the scaling issue in order to attain full-scale sustainability and guarantee clarity for businesses and consumers. All things considered, blockchain has great potential to strengthen transparency and trust, but more study is required to reach its full potential.

Increasing the security of digital marketing:

Blockchain has an image for being impenetrable owing to its invincibility, which is thought to strengthen the safety of digital marketing. According to a poll, 50% of participants think blockchain enhances digital marketing protection to a high degree, and 36.3% think it does so to a very high degree. Furthermore, 36.3% of respondents agree, and 45.4% strongly believe that implementing blockchain safeguards brands and gives customers a single representation of a brand's beliefs and traits (Vazquez Melendez, et al. 2024).

Because of their scalability and sophisticated algorithms for consensus, open-source blockchains eliminate one source of failure, enhancing online advertising security and thwarting cybercrimes. Private blockchains, however, could not be eligible because of concerns around stability. Blockchain's distinctive character as an unchangeable, distributed system necessitates a trustworthy and honest system,

which is dependent on a company's commitment to social responsibility and ethical principles.

Blockchain technology cannot take the role of ethics, but if companies tell the truth about their activities, public blockchains can protect their credibility rather than impose it, giving customers more trust in the system as a whole.

Table 10: Public and private blockchain's compliance

Public Blockchains	Private Blockchains
The data in a block is kept forever	Although the data in a block is immortal, the owner of the blockchain has the option to erase it at any time.
The user uses a pseudonym to identify themselves	A "actual" user's identity is necessary to log onto the network; the user's identity is not a pseudonym
All network users can see the block's data.	Depending on the guidelines established by the network owner, the data in a block may be accessible to all users on the network or only the designated user or users.

(Source: Created by Author)

Conclusion:

The growing popularity of cryptocurrencies has caused several businesses, including marketing, to take advantage of blockchain's advantages. The marketing sector is still hesitant to embrace blockchain's potential, however, which might result in a change to a new marketing environment with creative concepts. Establishing a reasonable scope for blockchain's commercial value is essential for legitimacy. The majority of marketing solutions, despite their promise, are still abstract and require time to develop. If blockchain is effective, it will signify a fresh approach in the growth of digital technology. Nevertheless, the study contains drawbacks, such as a lack of research on how blockchain affects advertising and low web-based poll responses of 29%. The marketing group needs to boost research and extensive polls by advisors and educational facilities, as well as collective expenditures among companies, to address challenges and implement blockchain initiatives specifically designed for marketing applications, to prevent falling behind.

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